

(No Model.)

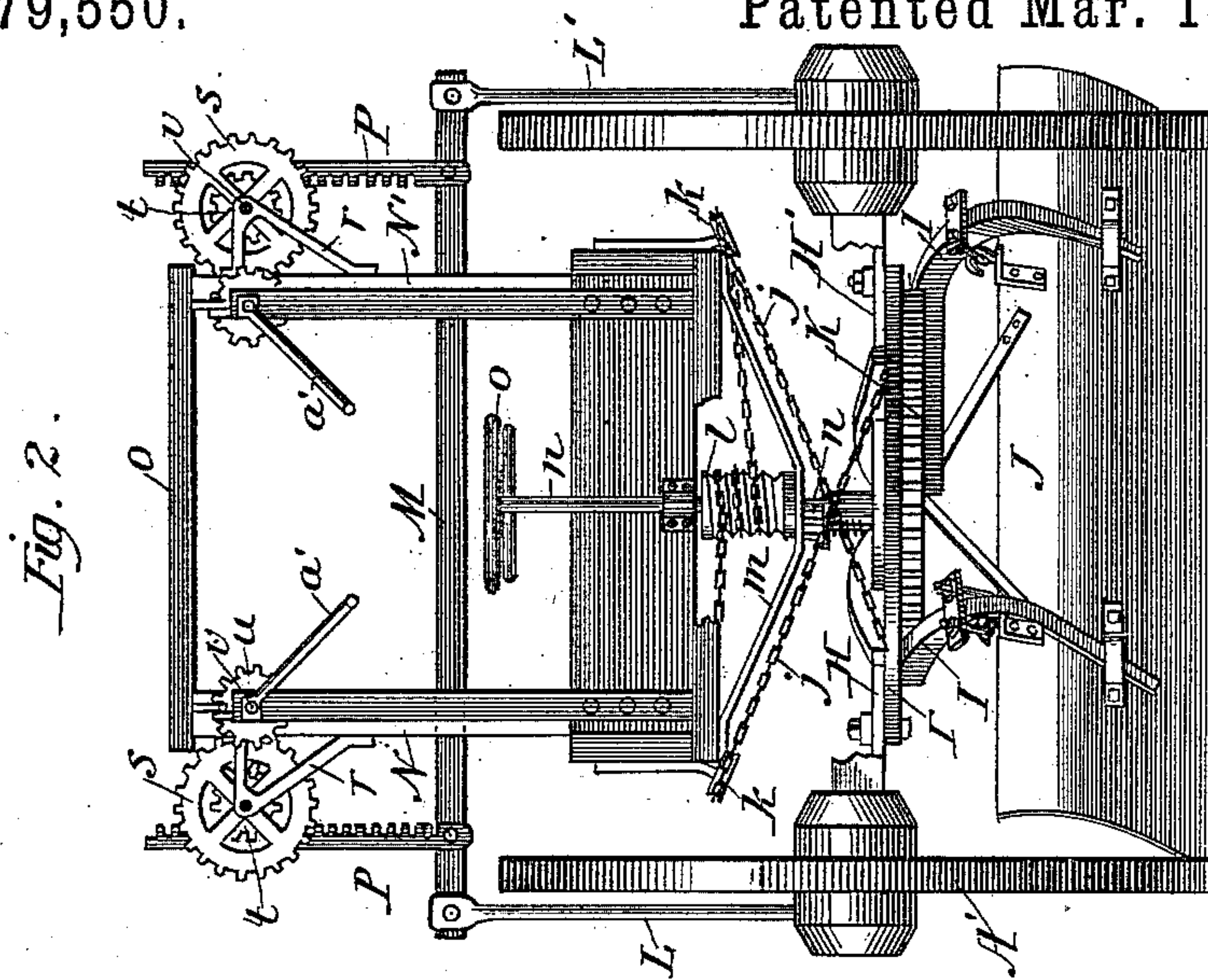
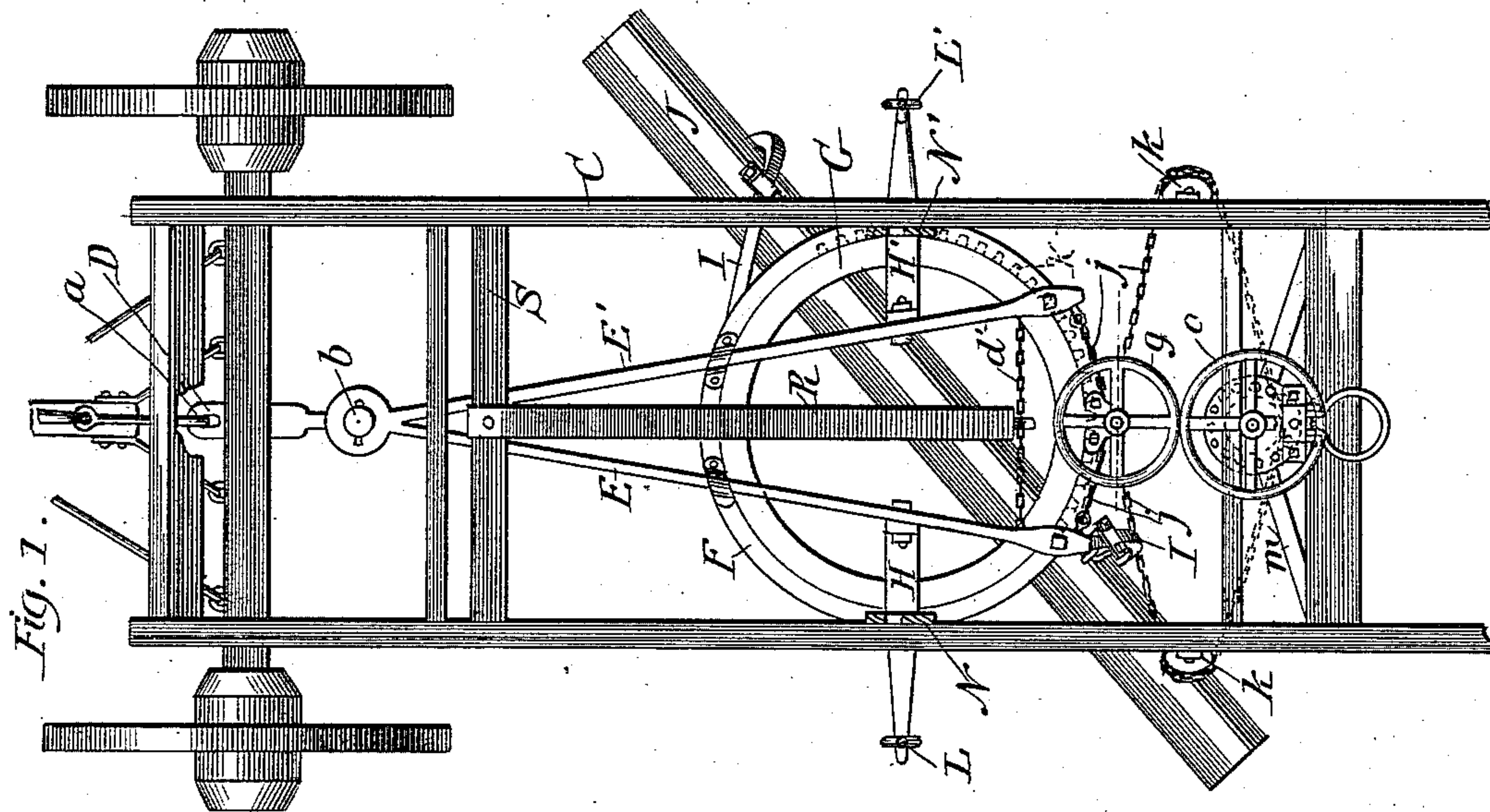
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S. F. WELCH.

ROAD GRADER.

No. 379,550.

Patented Mar. 13, 1888.



Witnesses:
Albert H. Adams.
Harry T. Jones.

Inventor:
S. Frank Welch.
By West & Bond.
His attys.

(No Model.)

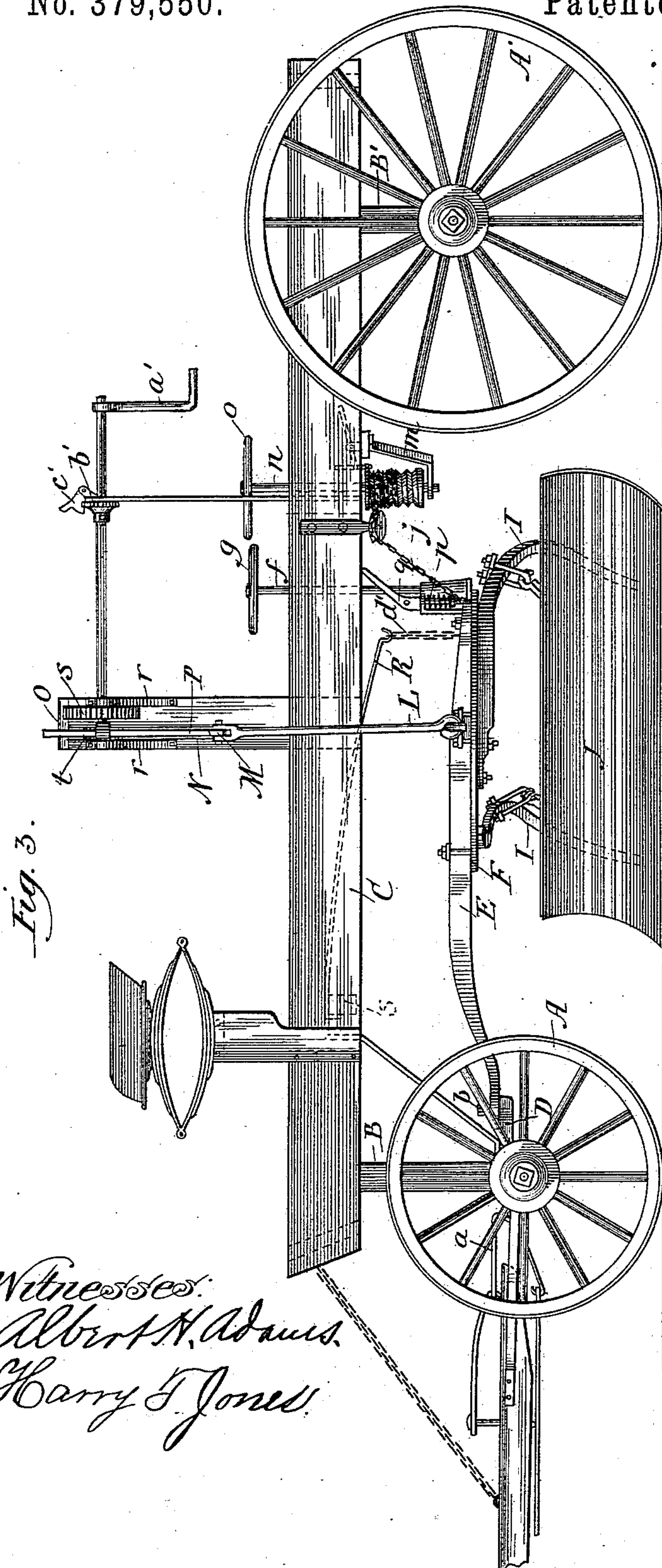
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S. F. WELCH.

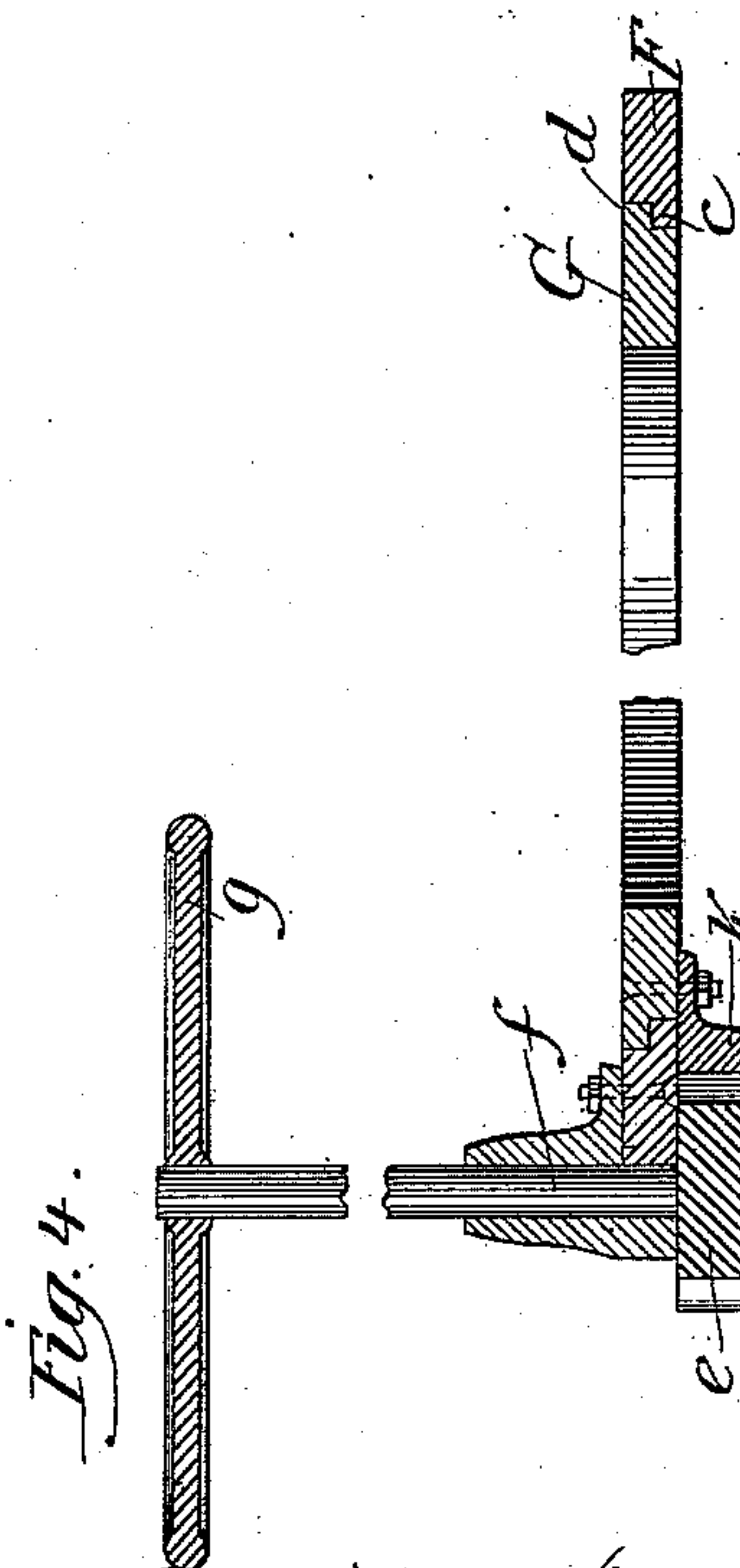
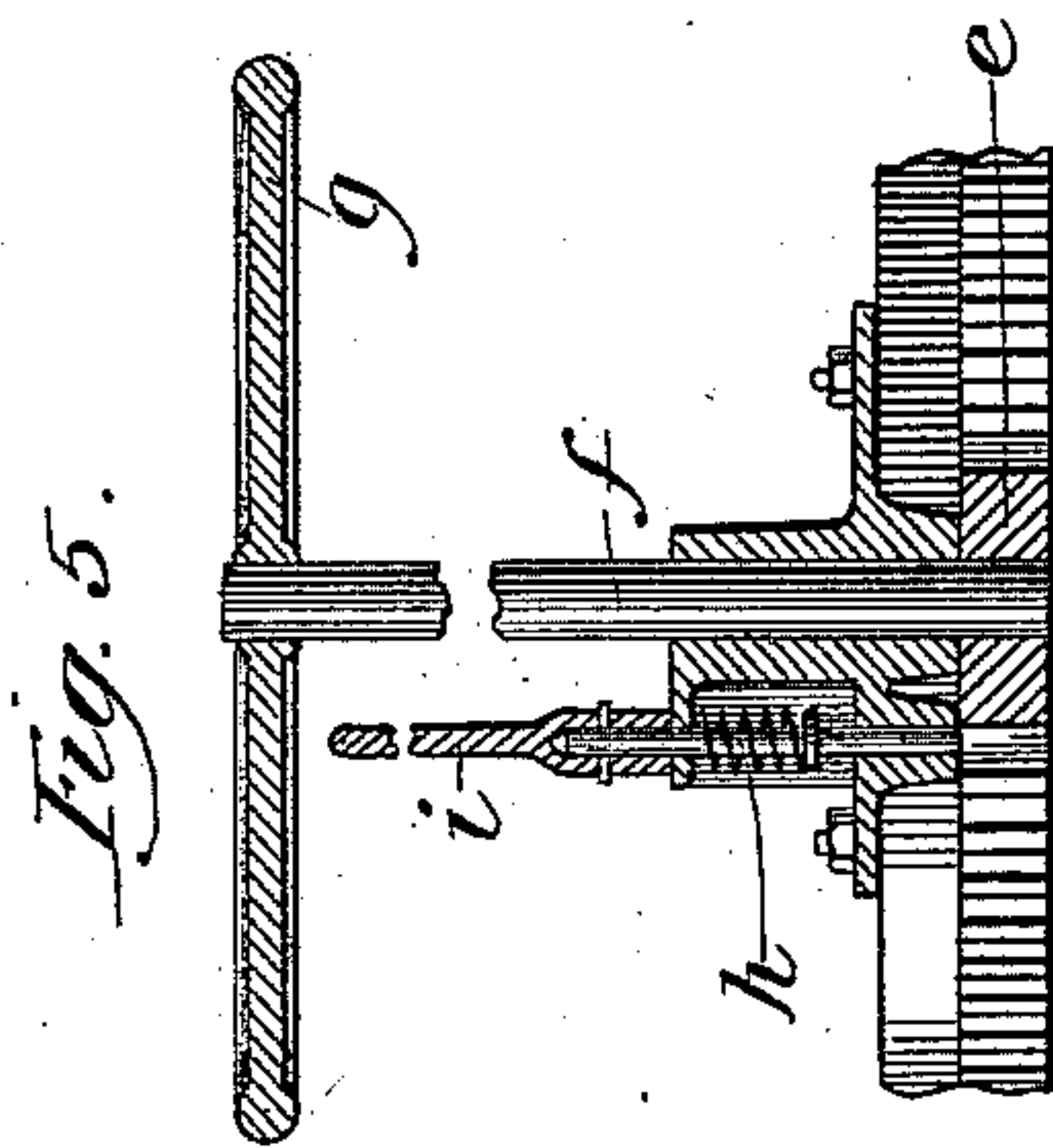
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UNITED STATES PATENT OFFICE.

S. FRANK WELCH, OF MOUNT PLEASANT, IOWA, ASSIGNOR TO THE
WESTERN WHEEL SCRAPER COMPANY, OF SAME PLACE.

ROAD-GRADER.

SPECIFICATION forming part of Letters Patent No. 379,550, dated March 13, 1888.

Application filed October 18, 1887. Serial No. 252,696. (No model.)

To all whom it may concern:

Be it known that I, S. FRANK WELCH, residing at Mount Pleasant, in the county of Henry and State of Iowa, and a citizen of the United States, have invented a new and useful Improvement in Road-Graders, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a plan. Fig. 2 is a rear elevation. Fig. 3 is a side elevation. Fig. 4 is a detail, being a longitudinal section through the rings F G and pinion *e*. Fig. 5 is a detail, being a section at line *x* of Fig. 1.

My invention relates to that class of road-graders in which the scraper is supported by a frame mounted on wheels, and in which it can be adjusted vertically and laterally and can be set at different angles of diagonal adjustment to the road-bed.

The leading object of my invention is to provide convenient and efficient means by the use of which the various adjustments desired can be secured, which I accomplish as illustrated in the drawings, and as hereinafter fully described. Those things which I claim as new will be set forth in the claims.

In the drawings, A A' represent the front and rear wheels of the road-grader, which wheels are supported on axles, as usual.

B B' are the front and rear bolsters. The front bolster is pivoted on the front axle and the rear bolster is rigidly attached to the rear axle.

C is a frame supported by the bolsters.

D is a draft-hook which passes through the front axle, and is pivotally secured thereto by a king-bolt.

a is a loop which passes through the forward end of the draft-hook D, the forward end of the loop being connected with the tongue.

b is an upward projection from the rear end of the draft-hook D.

E E' are two bars of a bifurcated beam having an eye at its front end, which is loosely attached to the projection *b* upon the draft-hook D.

F is a flat metal ring rigidly secured to the under side of the bars E E'. This flat ring has a flange, *c*, at its lower inside edge.

G is another flat ring, which has a flange, *d*, at its outside upper edge, which flange *d* rests

loosely on the flange *c* of the ring F, and this ring G can rotate freely within the ring F, and it is held in place by the bars E E', beneath which it is located.

H H' are arms the inner ends of which are rigidly secured, respectively, to the bars E E', and they are also secured to the plate F, and being located above the ring G, they aid in holding it in place.

I I are two curved arms, the upper ends of which are rigidly secured to the flat ring G.

J is a transversely-curved scraper-blade which is rigidly secured to the free ends of the curved arms I.

K is a toothed rack which is rigidly secured to the lower side of the flat ring G, and the rack extends nearly one-half the circumference of the ring. The rack may be made integral with the ring G, or it may be bolted or riveted thereto.

e is a pinion at the rear of the flat ring F and journaled thereto, which pinion engages with the rack K.

f is a shaft upon which the pinion *e* is secured, and *g* is a hand-wheel at the upper end of the shaft *f*.

h is a pin arranged to engage with and lock the pinion *e* in any desired position, the pin *h* being operated by the hand-lever *i*.

j j are chains attached at one end to the rear ends of the bars E E' or to the ring F, which chains cross each other, and, after passing around the sheaves *k k*, are attached to the opposite ends of a spiral grooved spool or drum, *l*. This drum *l* is journaled to a cross-piece, *m*, which forms a part of the main frame, and is secured to a shaft, *n*, to the upper end of which is secured a hand-wheel, *o*.

p is a pin used for locking the drum in any desired position, which pin is operated by a treadle, *q*.

L L' are bars loosely attached at their lower ends to the outer ends of the arms H H', and their upper ends are loosely attached to the opposite ends of a guide-bar, M. This bar M can slide freely up and down in guide-slots in the uprights N N', which are bolted to opposite sides of the main frame.

O is a cross-piece secured to the upper ends of the uprights N N'.

r r are brackets secured near the upper ends

of the uprights $N N'$, in which brackets are journaled short shafts which carry the gear-wheels $s s$ and pinions $t t$.

$P P$ are rack-bars secured to the bar M , with which the pinions $t t$ engage.

$u u$ are pinions attached to the ends of the shafts $v v$, which shafts are journaled at one end near the upper ends of the uprights $N N'$, and, extending rearward, are again journaled in the uprights Q . The pinions $u u$ engage with the gear-wheels $s s$. The shafts $v v$ are provided with cranks a' , and upon each shaft v is secured a notched wheel, b' , with which notched wheels dogs c' engage.

R is a spring-bar, pivoted at one end to a cross spring, S , the ends of which are secured to opposite sides of the frame C . The rear end of this spring-bar R is connected with a chain, d' , attached to the rear ends of the bars $E E'$ or to the flat ring F .

In use the scraper-blade J can be adjusted diagonally to the main frame by means of the hand-wheel g and pinion e , which engages with the rack K , which is secured to the ring G , which carries the scraper-blade, and by means of the pin h the pinion e , and hence the scraper-blade, can be locked in any desired position.

The desired lateral adjustment of the scraper can be obtained by means of the hand-wheel o , drum l , and chains j , and the drum, and hence the scraper, can be locked in any desired position by means of the pin p . The scraper-blade can also be adjusted vertically by means of the cranks a' , shafts v , gear-wheels s , pinions t , rack-bars P , and bars M and $L L'$. By operating either one of the cranks a' either end of the scraper-blade can be elevated or depressed independently of the other, as the ground to be operated upon may require.

The position of the scraper-blade can be changed from right to left or from left to right by means of the chains $j j$, drum l , and hand-wheel g , so as to deliver the earth either outside or inside of the wheels, and as may be required by the various classes of work to be performed.

The position of the scraper-blade may be changed so as to throw the earth either to the right or to the left, and all of the necessary adjustments can be easily and conveniently made, by means of the devices shown and described, by an operator suitably located on the machine.

The springs R and S sustain a portion of the weight of the scraper-blade and its attachments, thus making it more easy to adjust the blade vertically without interfering with its lateral movement.

I am aware that Letters Patent of the United States have been issued, one No. 363,342, dated May 17, 1887, one No. 370,655, dated September 27, 1887, and one No. 370,806, dated October 4, 1887; and I do not intend to claim as my invention anything which is shown and described in either of the said patents. Neither do I intend to claim, broadly, the use of chains for the purpose of giving lateral adjustment to the scraper.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a road-grader, the combination of a frame supported by wheels, a draft-bar for the scraper, as $E E'$, pivotally supported at its forward end, a ring, F , a ring, G , a rack, K , secured to said ring G , a scraper-blade supported by the ring G , and a pinion engaging with said rack, substantially as and for the purposes specified.

2. In a road-grader, the combination of a frame supported by wheels, a draft-bar for the scraper, as $E E'$, rings F and G , a scraper-blade supported by the ring G , chains $j j$, and drum l , substantially as and for the purposes specified.

3. In a road-grader, the combination of a frame supported by wheels, a draft-bar for the scraper, as $E E'$, rings F and G , a scraper-blade supported by the ring G , bars $H H'$, bars $L L'$, bar M , rack-bars $P P$, gear-wheels $s s$, and devices for rotating said gear-wheels, substantially as and for the purposes specified.

4. In a road-grader, the combination of a main frame, a draft-bar which supports a scraper, a spring bar, S , secured at its ends to the main frame, and a spring-bar, R , pivoted at one end to the bar S and connected at the other end with a chain, d' , attached as described, substantially as and for the purpose specified.

S. FRANK WELCH.

Witnesses:

ROBT. S. GILLIS,
JAS. T. WHITING.