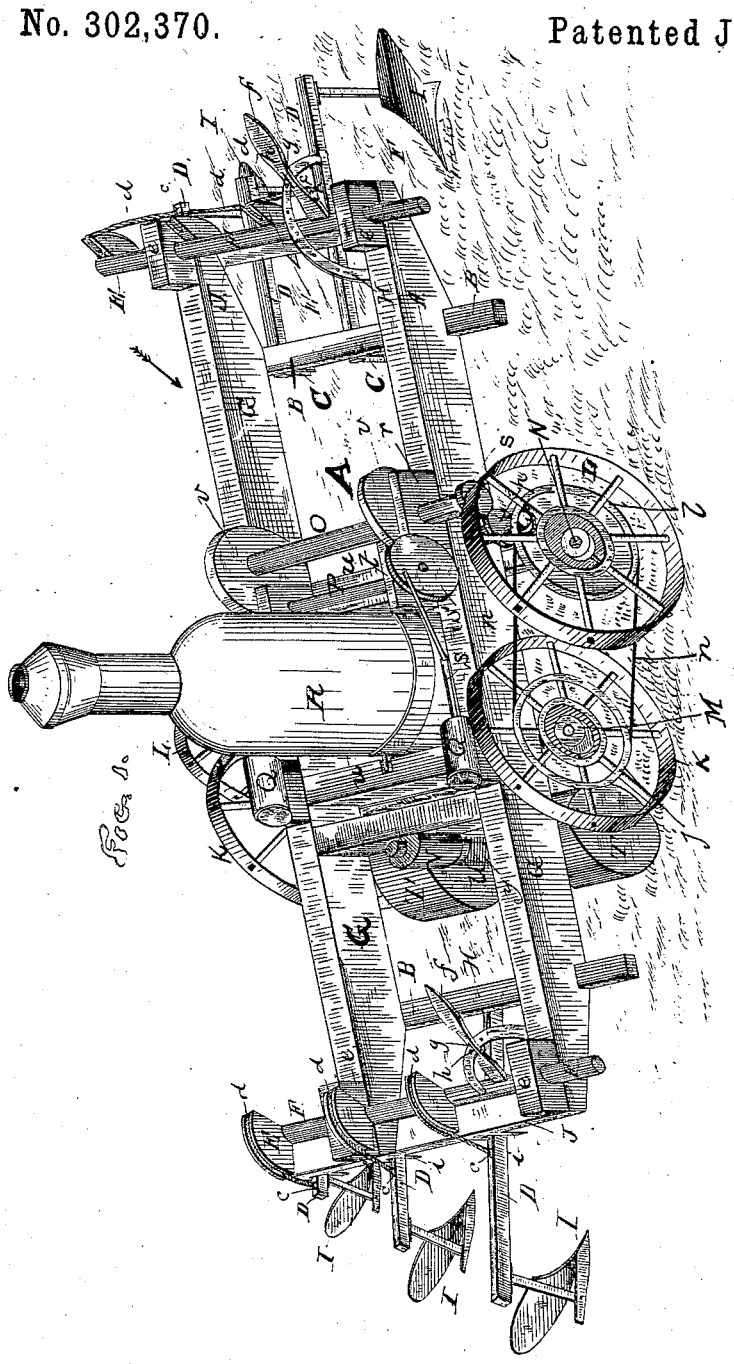
(No Model.) 4 Sheets—Sheet 1.

T. T. WOOD.

STEAM PLOW.

No. 302,370. Patented July 22, 1884.



WITNESSES:
E. P. Hough.
C. E. Jones.

INVENTOR:
Thomas Theodore Wood
By Chas J. Gooch
Attorney

(No Model.)

4 Sheets—Sheet 2.

T. T. WOOD.

STEAM PLOW.

No. 302,370. Patented July 22, 1884.

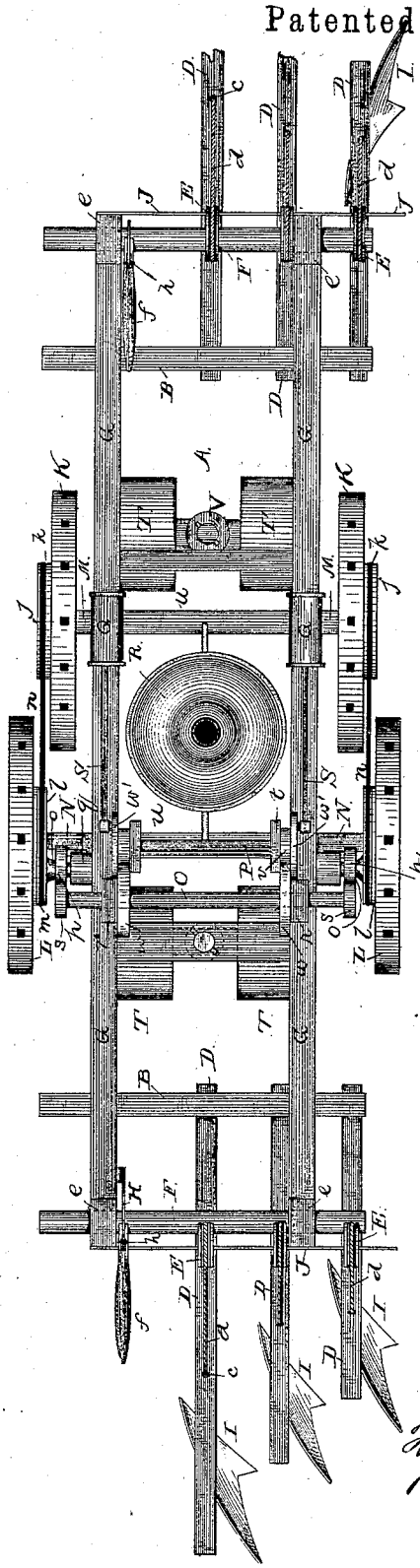


Fig. 4.

WITNESSES:

E. P. Hough.

C. E. Jones.

INVENTOR:

Thomas Theodore Wood

By Chas. J. Cook

his attorney.

(No Model.) 4 Sheets—Sheet 3.

T. T. WOOD.

STEAM PLOW.

No. 302,370. Patented July 22, 1884.

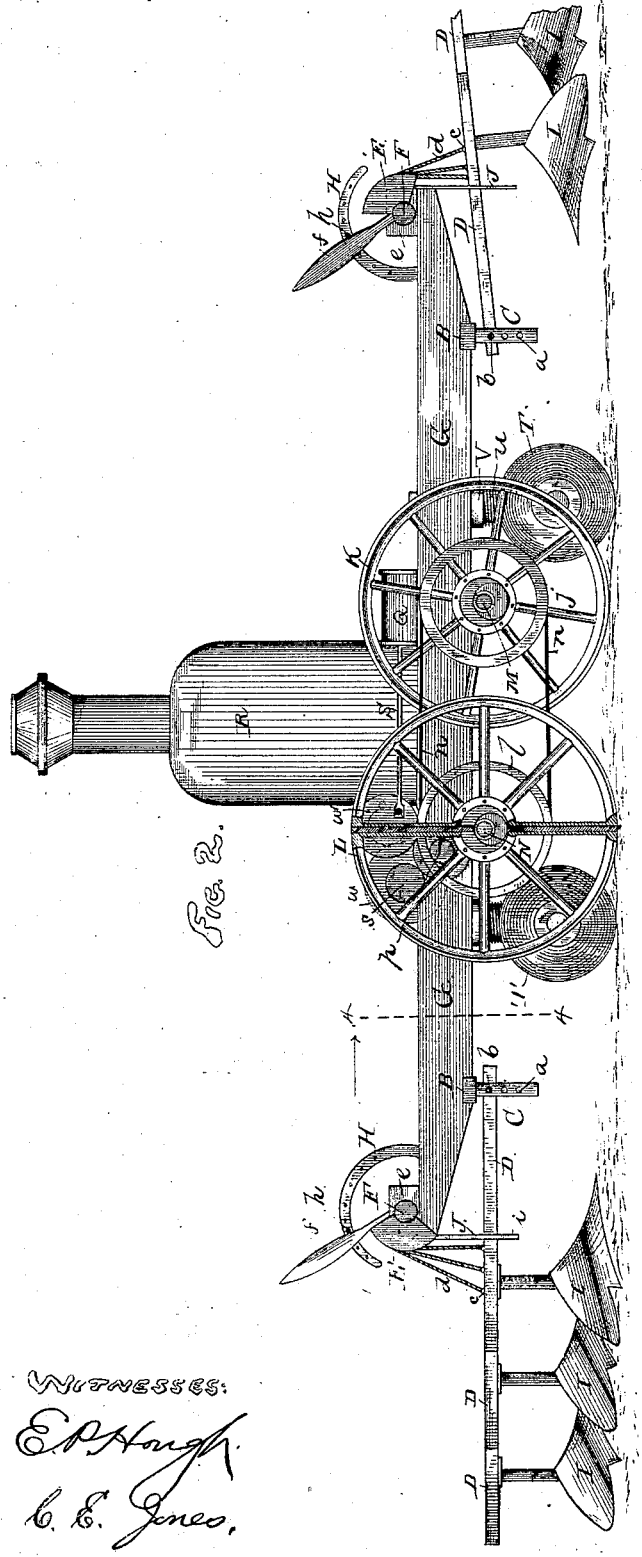


Fig. 2.

WITNESSES:
E. P. Hough.
C. E. Jones.

INVENTOR:
Thomas Theodore Wood
By Chas. J. Gooch
his attorney

(No Model.)

T. T. WOOD.

4 Sheets—Sheet 4.

STEAM PLOW.

No. 302,370. Patented July 22, 1884.

Fig. 3.

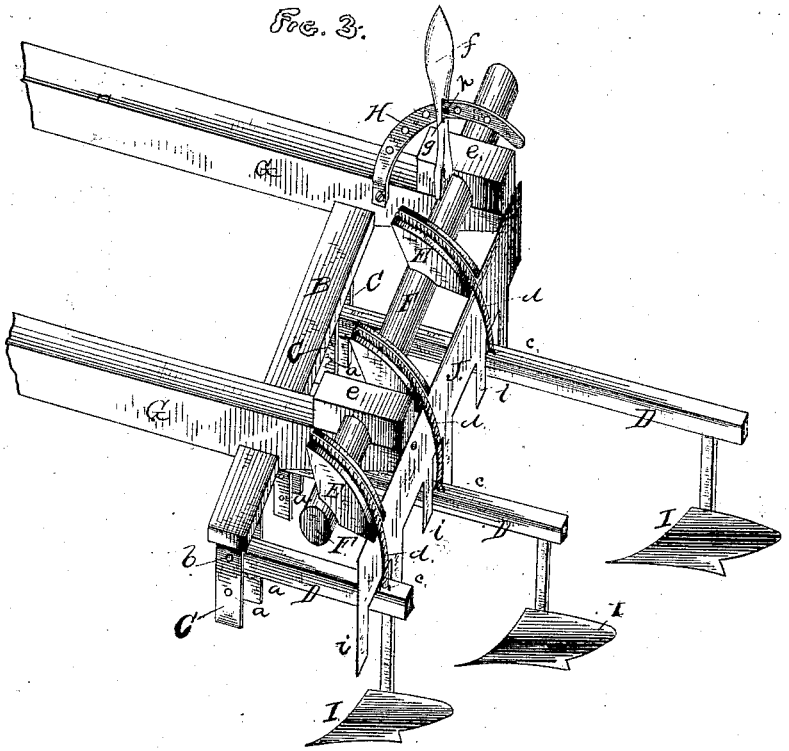
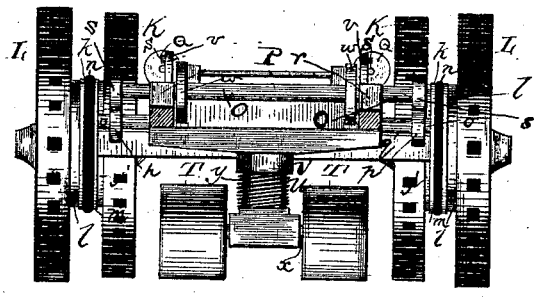


Fig. 4.



Witnesses:
E. P. Hough
C. E. Jones

Inventor:
Thomas Theodore Wood
By Chas. J. Gooch
attorney

UNITED STATES PATENT OFFICE.

THOMAS THEODORE WOOD, OF KEOKUK, IOWA.

STEAM-PLOW.

SPECIFICATION forming part of Letters Patent No. 302,370, dated July 22, 1884.

Application filed October 13, 1883. (No model.)

To all whom it may concern:

Be it known that I, THOMAS THEODORE WOOD, a citizen of the United States of America, residing at Keokuk, in the county of Lee and State of Iowa, have invented certain new and useful Improvements in Steam-Plows, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain improvements in steam-plows, as will be hereinafter described and claimed.

In the drawings, Figure 1 represents in perspective my improved plow. Fig. 1[A] represents a top plan. Fig. 2 represents a side elevation. Fig. 3 represents in perspective to an enlarged scale one end of the frame, with the thereto attached plows, plow-beams, and devices for operating and adjusting the same. Fig. 4 represents a cross-section on the line 4 4 of Fig. 2.

A represents the frame, which is of rectangular form, as shown, and has at each end cross-beam B, from the under side of which depend straps or hangers C, having slots or holes *a*.

D D represent the plow-beams, which have at their front ends a slot or hole, and are pivotally secured within and between each pair of straps C by means of pin *b*.

Attached to each beam D is an eye, *c*, to which is connected one end of a chain or cord, *d*, which passes from thence to and over a segment, E, mounted upon or attached to a transverse rock-shaft, F, the opposite end of each chain or cord being attached to said segment. Each segment has a groove in its outer curved edge, within which the chain or cord *d* rests, and which serves to hold said cord securely in position at all times. The cord or chain *d* is attached to the rear of the segment and in line with the groove therein, and has no movement independently of said segment; consequently it will rest within said groove at all times, and the groove thus holds the cords and affords a more perfect guide thereto than would be the case did the chain or cord slide along the groove independently of the rocking motion of said segments. Where the chains are drawn over sheaves, they are apt to slip out of the groove and become disarranged—a disadvantage avoided by my arrangement. This rock-shaft has bearing in blocks *e*, mounted upon the side bars, G, of the frame, and has a handle or lever, *f*, which has a vertical slot, *g*, through which passes a slotted or perforated segment or arm, H.

h represents a pin, adapted to pass through the slots or holes in the quadrant H, and thereby hold the lever or handle *f* and its connected rock-shaft in position.

I I represent the plowshares attached to the rear ends of the beams D by the customary standards, or in any other suitable way.

J represents a forked guide-bar attached to the outer ends of the side bars, G, the fingers or prongs *i* depending therefrom in pairs, between which the plow-beams are supported and slide.

By pivoting the plow-beams D within the slotted hangers C and connecting them by means of a chain or cord with the segment-carrying rock-shaft, I am enabled to raise and lower the plow beams and shares and adjust them to any height desired. By the employment of the slotted hangers I am enabled to regulate the height of each plow-beam and shaft independently of the others, thereby adapting the machine to form furrows of different depths simultaneously. Any desired number of beams and shares may be mounted at each end, as occasion may require, the number of segments E, straps or hangers C, and guide-prongs *i* corresponding with the number of plow-beams employed. By supplying the frame A with these described arrangements of plow beams and shares, rock-shaft, &c., at each end, it will be observed that I am enabled to use the machine in whichever direction it may stand without being under the necessity of turning it around whenever plowing has to be done in opposite directions.

K and L represent traction-wheels, which are constructed, preferably, in the manner shown and described in my Patent No. 247,792, granted October 4, 1881. The wheels K K are mounted upon a short transverse axle, M, and have on their outer faces a ring or disk, *j*, having grooved outer edge, *k*. The wheels L L are mounted upon an axle, N, somewhat longer than axle M, in order that the several wheels K and L may be mounted near together in the framing and centrally of the machine. By this means I am enabled to insure the steadi-

ness of motion of the machine, as by reason of the arrangement of the wheels, however unequal the ground may be, one set of wheels will always have bearing upon the ground, even should the inequality of the ground be such as to cause the other set of wheels to be out of frictional contact therewith.

l represents a disk or ring upon the inner face of each wheel L, and having a circumferential groove, *m*.

n represents a band passing around the grooved disks *j l*, for the purpose of transmitting motion from one set of wheels to the other set. The disk *l* is recessed interiorly for the reception of the enlarged end of a short loose shaft, *o*, having upon its inner end a pulley or gear, *p*. This shaft and gear is hollow and is loosely mounted upon an arbor or spindle, *q*, projecting from the outer face of the side bars, G.

O represents a transverse shaft, having bearing in blocks *r*, mounted upon the side bars, G.

s represents pulleys or gears mounted upon the ends of the shaft O, and having frictional contact with the pulleys or gears *p*.

P represents another cross-shaft, journaled in bearings *t* upon the cross-beam *u*, and having friction-disks or gear-wheels *v*, which mesh with gears *w*, mounted upon the shaft O within the side bars, G.

Q Q represent steam-cylinders mounted upon the side bars, G, and having suitable connecting rods or pistons, S, which connect with the gears *w'*, so that upon the boiler being started and the pistons set in motion they will rotate the gears *v*, and they in their turn will impart motion to the gears *w*, which in their turn will rotate the shaft O, and cause the wheels or gears *s* to revolve the pulley or gear *p*, and thereby impart rotary motion to the traction-wheels L, the motion of which is transmitted by the band *n* to the wheel K.

The vertical boiler R has gimbal-bearings upon the cross-beam *u*. By this means the vertical position of said boiler will always be maintained, however rough may be the road traversed, and however irregular the movements of the supporting-frame may be.

T T represent vertically-adjustable rollers, of which there are two mounted upon shaft *x*, near each end of the machine. These rollers have a broad tread, as shown, for the double purpose of affording support to the machine and preventing its sinking into moist or soft earth.

U represents a spring-encircled arbor or spindle, which is connected at its lower end to the shaft *x*, and at its upper end passes through and is keyed within a sleeve or socket, V, on one of the cross-beams of the frame. Any suitable device may be connected with the upper end of each arbor or spindle U for the purpose of turning it sidewise in either direction, by which means said rollers also serve as guide-rollers for guiding the machine in the desired direction. The spring *y*, encircling the spindle or arbor U, has a constant tendency to press the shaft *x*, and consequently the rollers T, down, by which means the tread of said rollers upon the ground will always be regularly even.

By arranging the traction-wheels K and L and the rollers T centrally of the machine, firm support is afforded thereto and to that part of the frame whereon the heavy working parts of the machine are located. By arranging one set of traction-wheels on a short axle and the other set on a longer axle, the latter set of wheels is extended outwardly from each side beam beyond the line of tread of the wheels mounted on the shorter axle, by which means one set of wheels will always travel upon the unplowed ground at the outside of the furrows.

In lieu of the quadrant H and lever or handle *f*, a tangent screw and wheel may be employed.

Having thus described my invention, what I claim therein is—

1. A steam-plow having two pairs of drive or traction wheels mounted centrally of the framing upon axles of unequal length, for the purpose of affording a central support at the heaviest part thereof, substantially as set forth.

2. In a steam-plow, the combination of the traction-wheels K, having a short transverse axle, and on their outer faces a grooved ring or disk, *j k*, the traction-wheels L, mounted upon a longer axle than the axle of the wheels K, and having on their inner faces a grooved ring or disk, *l m*, and a band connecting said grooved disks, for the purpose of transmitting motion from one pair of traction-wheels to the other pair, substantially as set forth.

3. The combination, with the traction-wheels K and L and means, substantially as described, for connecting the same together, of the loosely-mounted shaft *o*, adapted to engage with the traction-wheels K, and having upon its outer ends pulleys or gears *p*, shaft O, having a pulley or gear, *s*, at each end to engage the pulleys or gears on the shaft *o* and gears *w*, shaft P, having gears *v*, which engage with the gears *w*, and means, substantially as described, for operating the gears *w*, as set forth.

4. A steam-plow having traction-wheels mounted upon shafts of unequal length, and centrally of the frame, and frame supporting and guiding rollers T, mounted in pairs upon vertical shafts *i*, near the center of the frame, each having a spring-encircled arbor or spindle, connected at its lower end to the shaft *i*, and at its upper end keyed within a sleeve or socket, V, on the frame, said rollers T having a broad tread, for the purpose of affording support to the machine and preventing its sinking into the earth, and being adapted to be turned sidewise for the purpose of guiding the machine, substantially as set forth.

5. A steam-plow having two pairs of drive or traction wheels, each pair being mounted centrally of the machine upon axles of different length, one pair having a grooved rim or disk, *j*, on their inner faces, and the other pair

a similar rim or disk, *l*, on their outer faces, said disks being connected together by a band, *n*, whereby rotary motion is transmitted from one pair of traction-wheels to the other pair, and means, substantially as described, for driving the operative pair of traction-wheels, as set forth.

6. The combination, in a steam-plow, with the frame A, of the traction-wheels L, each having a ring or circumferential flange, *l*, on its inner face, arbor or spindle *q*, projecting outwardly from the side bar of the frame, shaft *o*, loosely mounted upon said spindle *q*, and having an enlarged outer end adapted to engage with the inner face of said flange *l*, and a pulley or gear, *p*, near its inner end, shaft O, having at each end a pulley or gear, *s*, adapted to engage with the pulleys or gears *p*, and means, substantially as described, for imparting motion to shaft O, as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS THEO. WOOD.

Witnesses:
O. S. DAVIS,
H. A. DICKERSON.