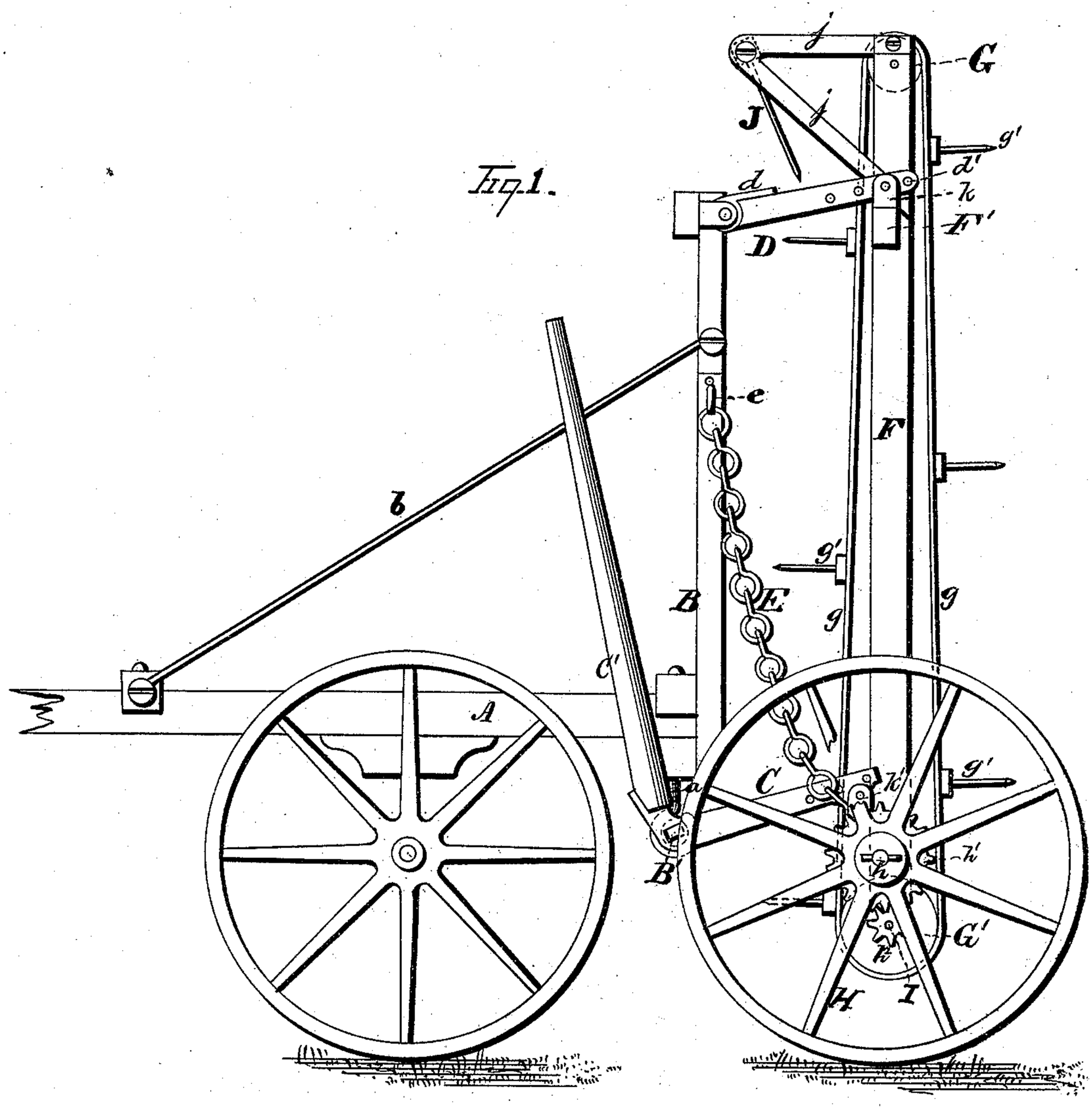
3 Sheets—Sheet 1.

H. L. SHIELDS.

HAY-LOADER.

No. 174,094. Patented Feb. 29, 1876.

Fig. 1.



WITNESSES

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3 Sheets—Sheet 2.

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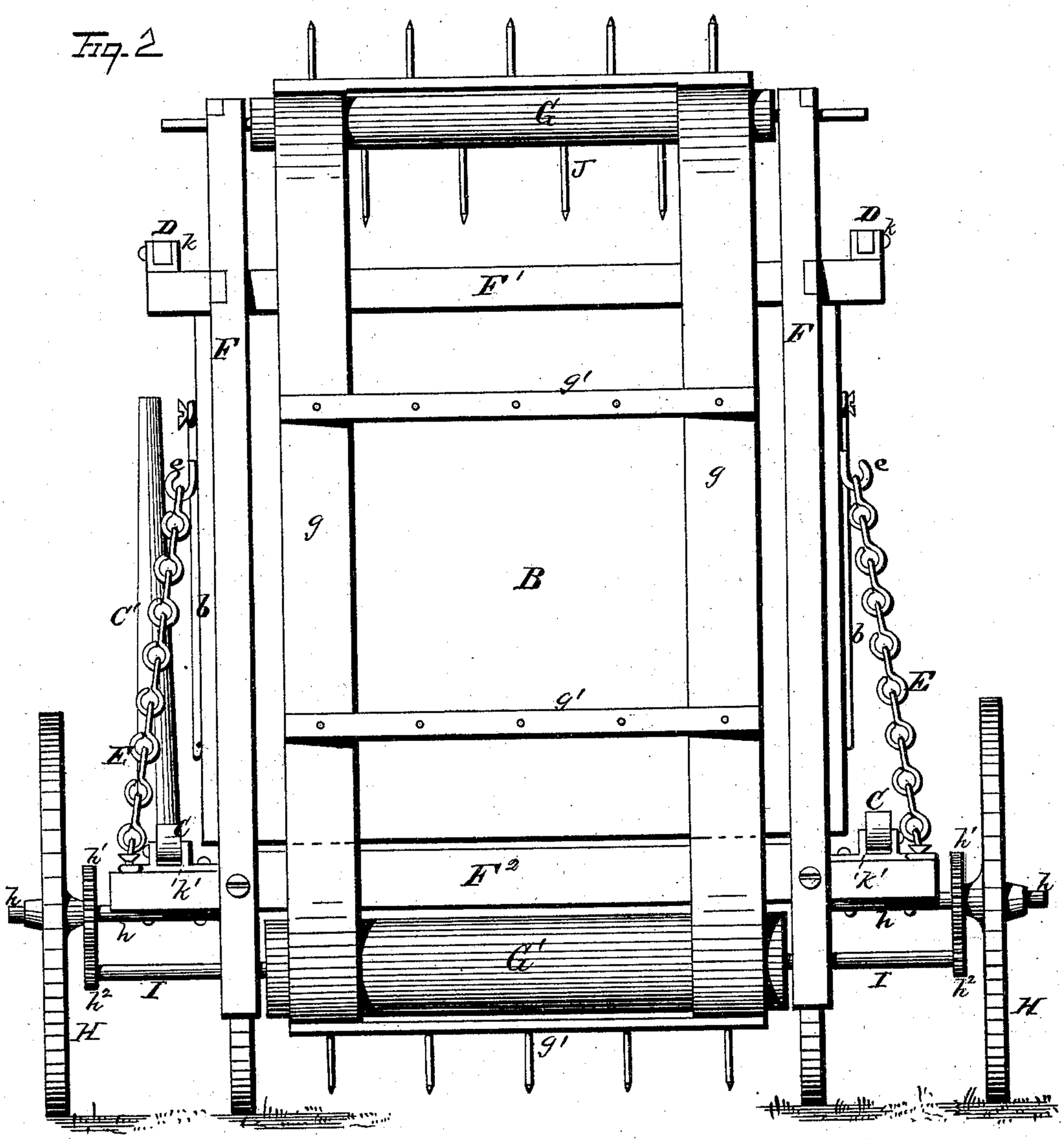
Fig. 2



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3 Sheets—Sheet 3.

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HAY-LOADER.

No. 174,094. Patented Feb. 29, 1876.

Fig. 3.

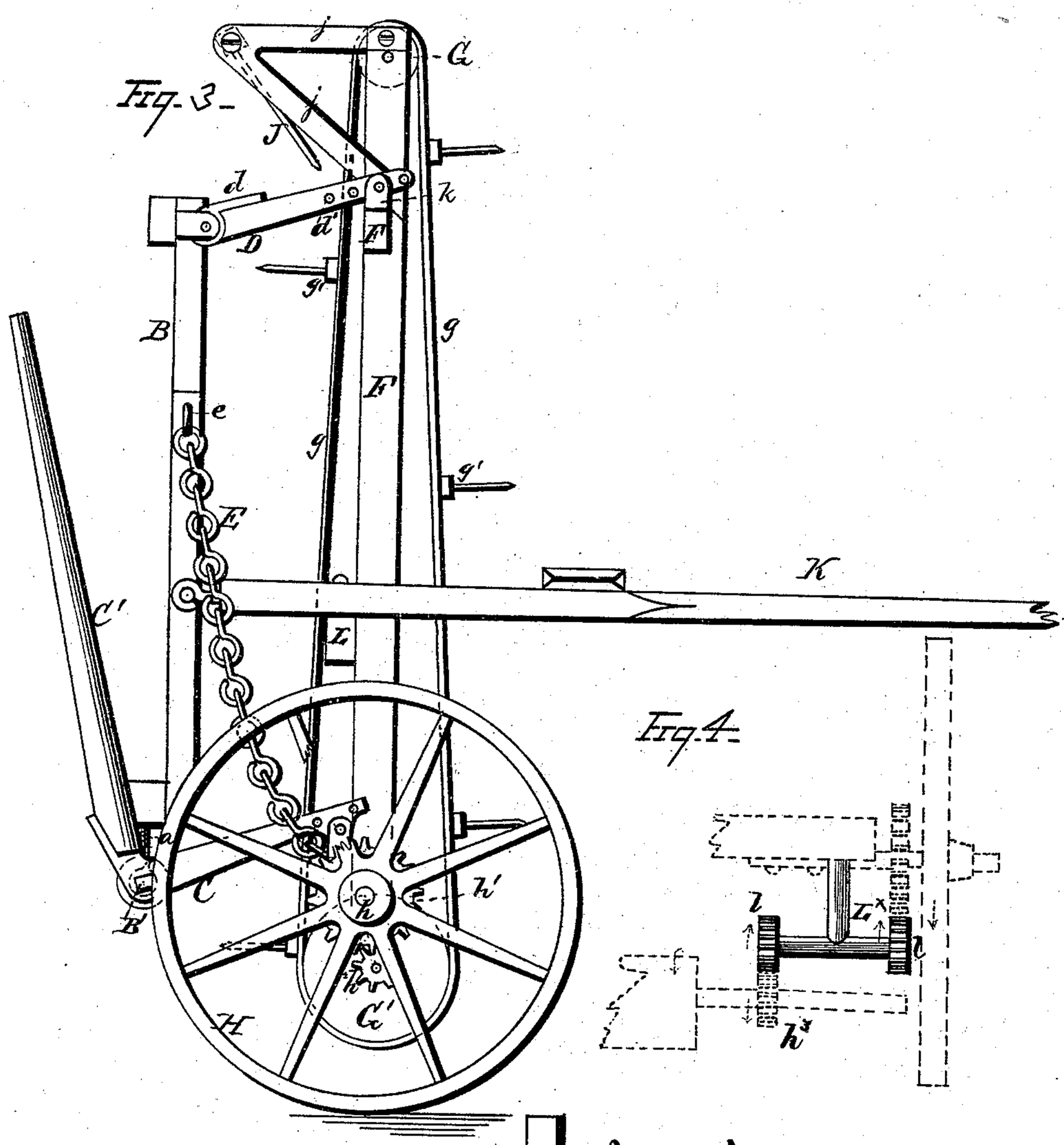
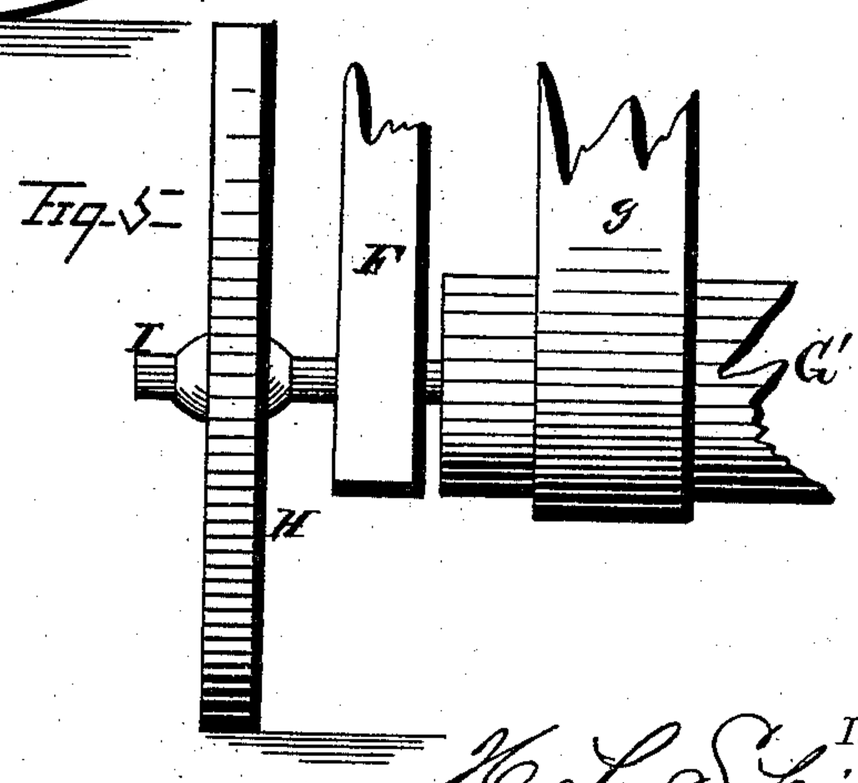


Fig. 4.

Fig. 5.



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UNITED STATES PATENT OFFICE.

HAMILTON L. SHIELDS, OF TROY, NEW YORK.

IMPROVEMENT IN HAY-LOADERS.

Specification forming part of Letters Patent No. **174,094**, dated February 29, 1876; application filed February 6, 1875.

To all whom it may concern:

Be it known that I, HAMILTON L. SHIELDS, of Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Hay-Loaders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to certain new and useful improvements in hay-loader, which is so constructed and arranged as to adapt it to be converted at will into a hay-tedder, without material alteration or change of the parts.

In the drawings, Figure 1 is a side elevation of the machine, secured to the rear of a wagon, in position for use as a hay-loader. Fig. 2 is a rear view of same; Fig. 3, a side elevation of the machine as removed from the wagon, and in use as a tedder; Fig. 4, a detached view of the hanging gears, to be attached to the frame of the machine when used as a tedder, the other parts in relation thereto being shown in dotted lines; Fig. 5, a partial view, showing the driving-wheel attached directly to the lower cylinder when the machine is used as a tedder.

My invention consists in certain combinations and arrangements of devices and appliances, as hereinafter more fully described and claimed, wherein—

A represents an ordinary hay-wagon, to the rear end of which is secured, by means of bolts *a* and braces *b*, a vertically-projecting "tail-board" or apron, B. Secured to the bottom edge of the apron B is a shaft, B′, to each end of which is keyed a brace or lever, C C′. To the top of the apron B are also secured braces D D, provided with a hinge-joint, *d*, at one end, and a number of adjustment-holes, *d′*, at the other. E are chains, secured to the elevator-frame F, and to the apron B, by hooks *e*. These braces D, keyed levers or braces C C′, and chains E, connect and secure the apron to the hay-elevator proper. This elevator consists of a vertical frame-work or timbers, F F, and cross-braces F^1 F^2. To the top and bottom ends of this frame are journaled cylinders G G′. Over these cylinders pass bands *g*, to which rake-heads *g′* are attached. H are the driving-wheels, which support the elevator, running on short axles *h*, bolted to the lower cross-brace F^2 of the frame. Secured to the driving-wheels H, and running on the axles *h*, are large gear-wheels h^1, which engage with small gear-wheels h^2, secured to ends of an axle, I, which is secured in and operates the lower cylinder G′. To the top part of the frame F is attached a swinging rake-head, J, held in position by braces *j*. This rake-head or discharger is so arranged that the teeth of the elevators or rake-heads *g′* pass between the teeth of the discharger. *k k′* are steps or brackets, within which the braces D D C C′ are secured, to attach the elevator-frame and the apron B together.

The operation of this device is as follows: The device is attached to the rear of a wagon by the bolts *a* and *b*. The team is then started. The wheels H revolving cause the large gear-wheels h^1 to revolve, and it, in turn, causes the small wheels h^2 and the cylinder G′ to revolve inwardly toward the wagon. The revolution of the cylinder causes the bands *g*, carrying the rakes *g′*, to be revolved and elevated in the direction of the arrows. The rakes *g′*, coming in contact with the loose cut hay on the ground, the hay is caught up by the rakes, carried up between, guided and held in place by the apron B until it reaches the toothed frame J, when, by the inclination of this frame, the hay is guided and discharged over the apron B into the wagon A.

The throat or distance between the apron B and the elevating-frame F is adjusted so as so bring the frame near to the apron in raking thin or scattered hay, to closely confine the same, by adjusting the braces D D and C C′, the swinging discharger J also being adjusted relatively to the apron. In going to and from the field, in turning around, or in passing over obstructions, the entire elevator is lifted from the ground by the lever C′, and retained in this position by hooking up the chains E on the hooks *e*. This now completes the device as a hay-loader, as represented in Figs. 1, 2, and 3.

Now, to convert the machine into a tedder, the machine is removed from the wagon, and thills K K are placed in position, as shown in

Fig. 3, and held in this position by securing the ends of the thills to the apron B, and to a cross-brace, L, secured to the frame F F. These thills K K, when the device is used as a loader, are removed, as shown in Fig. 1, and the elevator secured to the wagon by the braces *b* and bolts *a*; or these thills may be reversed or brought around in an opposite direction, being secured to the frame F instead of to the apron B, and the elevator secured to the rear of the wagon by these thills, if desired, the thills thus operating or employed to draw the machine in one direction as a tedder, and in an opposite one as a loader.

To give the cylinder G′ and the bands *g*, carrying the rake-heads, the proper rotation when the machine is to be used as a tedder, the small gear-wheels h^2 are removed, but smaller gears h^3 are slipped along on the shaft I. The hanging bracket $L^{\times}$, carrying gears *l*, is then placed in position, as shown in Fig. 4, and secured to the frame F^2, so that the larger gear-wheels *h*, on the driving-shaft, mesh into one of the gears on one side of the hanging bracket, the opposite gear of the bracket meshing into the small gear h^2 on the shaft I, thereby causing the cylinder G to be revolved or driven in the right direction rearward, and in an opposite direction to that when used as a loader.

In loading, the cylinder G′ revolves in the direction of team; while in tedding the cylinder revolves in a direct opposite direction from the team.

Instead of using these hanging gears $L^{\times}$, to give the reverse motion to the cylinder G′, the driving-wheels H H may be removed from the present position, Figs. 1, 2, and 3, and secured on the shaft I of the cylinder G′, thus making it revolve in the desired direction.

The operation of the machine now, as a tedder, is as follows: It is drawn along by the thills K K, the cylinder G′ revolving and carrying the rakes with it, which catch up the hay, carry it up and over the rear of the apron, back onto the ground, thus thoroughly stirring, and, by lifting it such a height from the ground, allowing the air to circulate freely through it, and, consequently, quickly and thoroughly tedding and curing the hay.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the elevator F and apron B, the adjustable braces D D, constructed with a hinge-joint, *d*, at one end, and a number of adjustment-holes, h^1, at the other, and keyed braces or levers C C′, and chains E, whereby the elevator is secured to, and adjusted with relation to, the apron B, as and for the purposes described.

2. In combination with the cylinder G′, driving-wheel H, pinion h^1, and removable gears h^2 h^3, the removable bracket $L^{\times}$, provided with gears *l*, for reversing the direction of the cylinder G′ and converting the machine into a tedder, as described.

3. In combination with the elevator-frame F and apron B, the removable thills K, adapted to be secured in the front or rear of the machine, whereby it is drawn in one direction as a loader, and in an opposite one as a tedder, as and for the purposes described.

In testimony that I claim the foregoing I have hereunto set my hand this 26th day of January, 1875.

HAMILTON L. SHIELDS.

Witnesses:

J. H. HUNTINGTON,

THEO. E. HASLEHURST.