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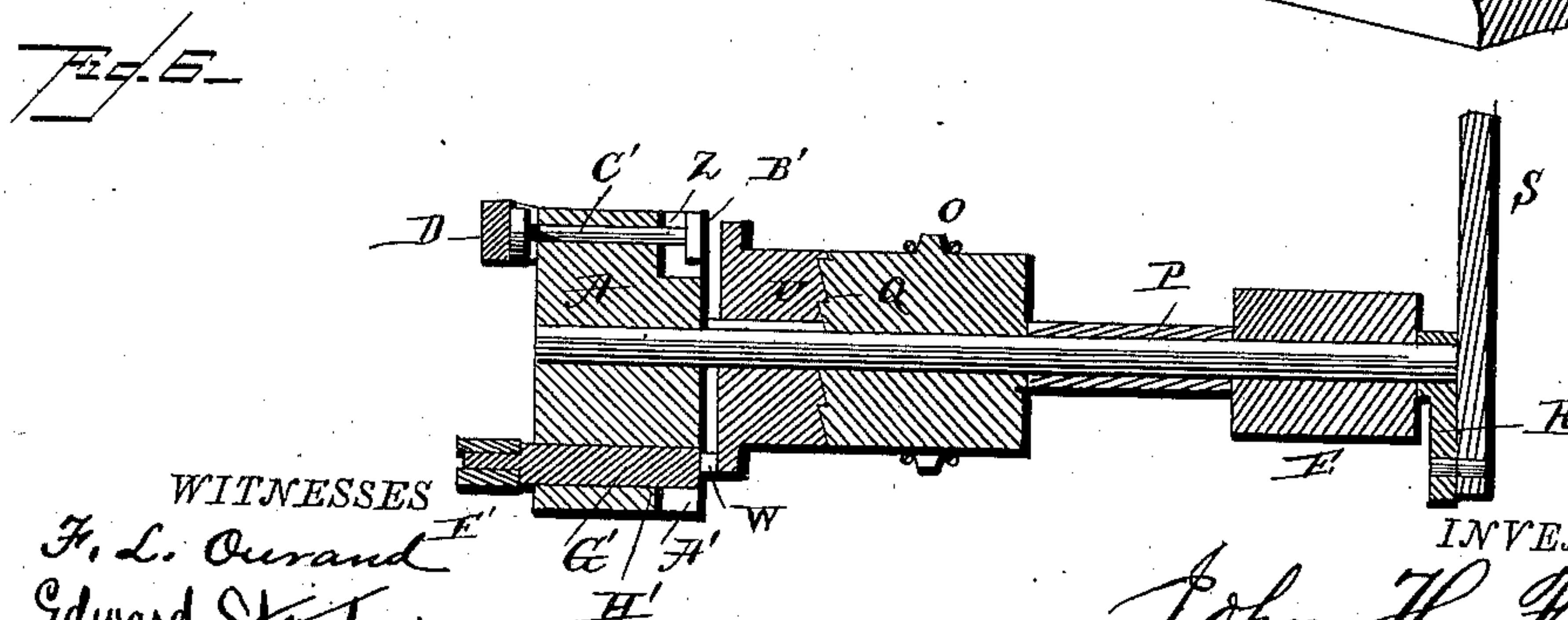
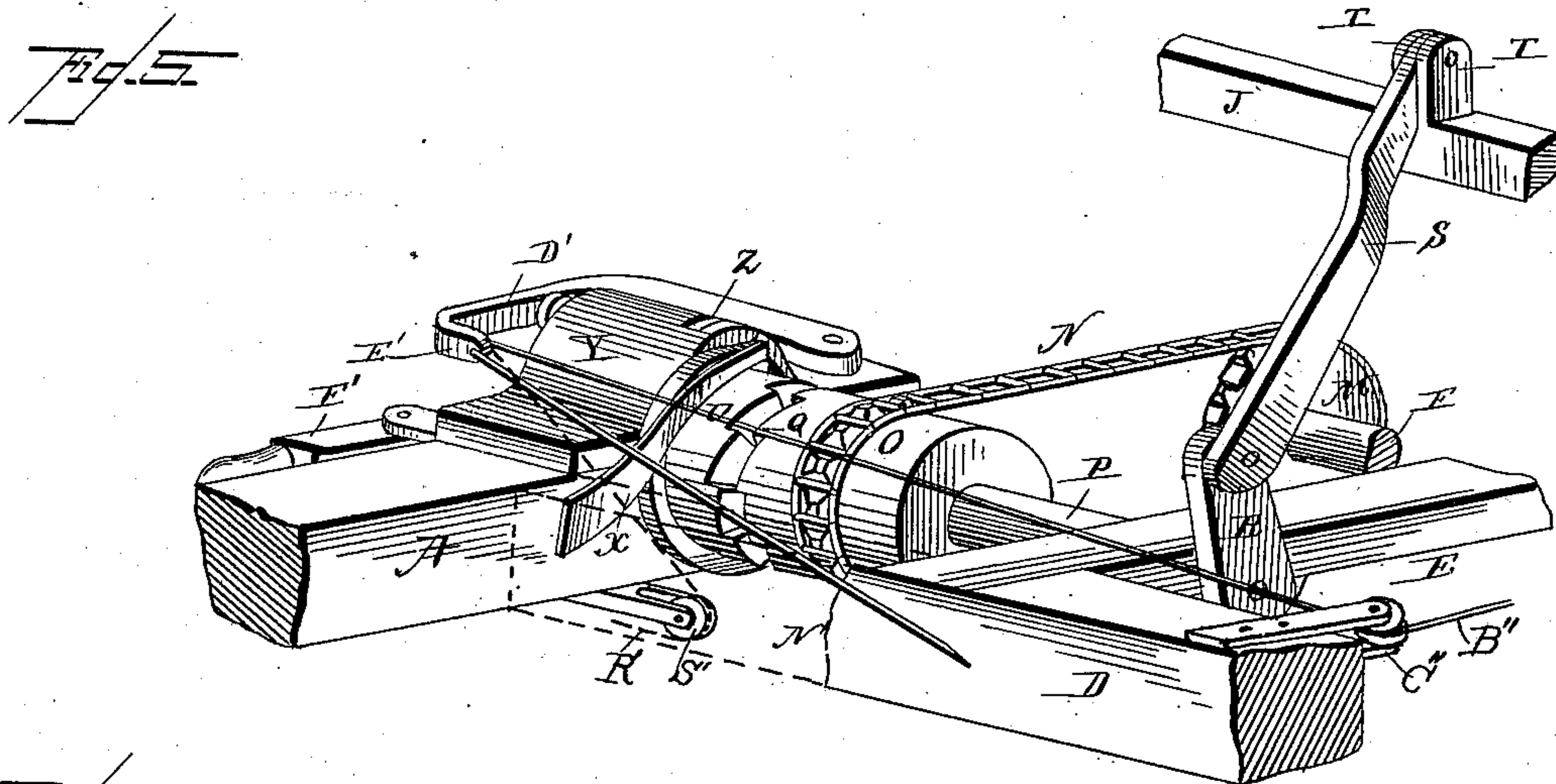
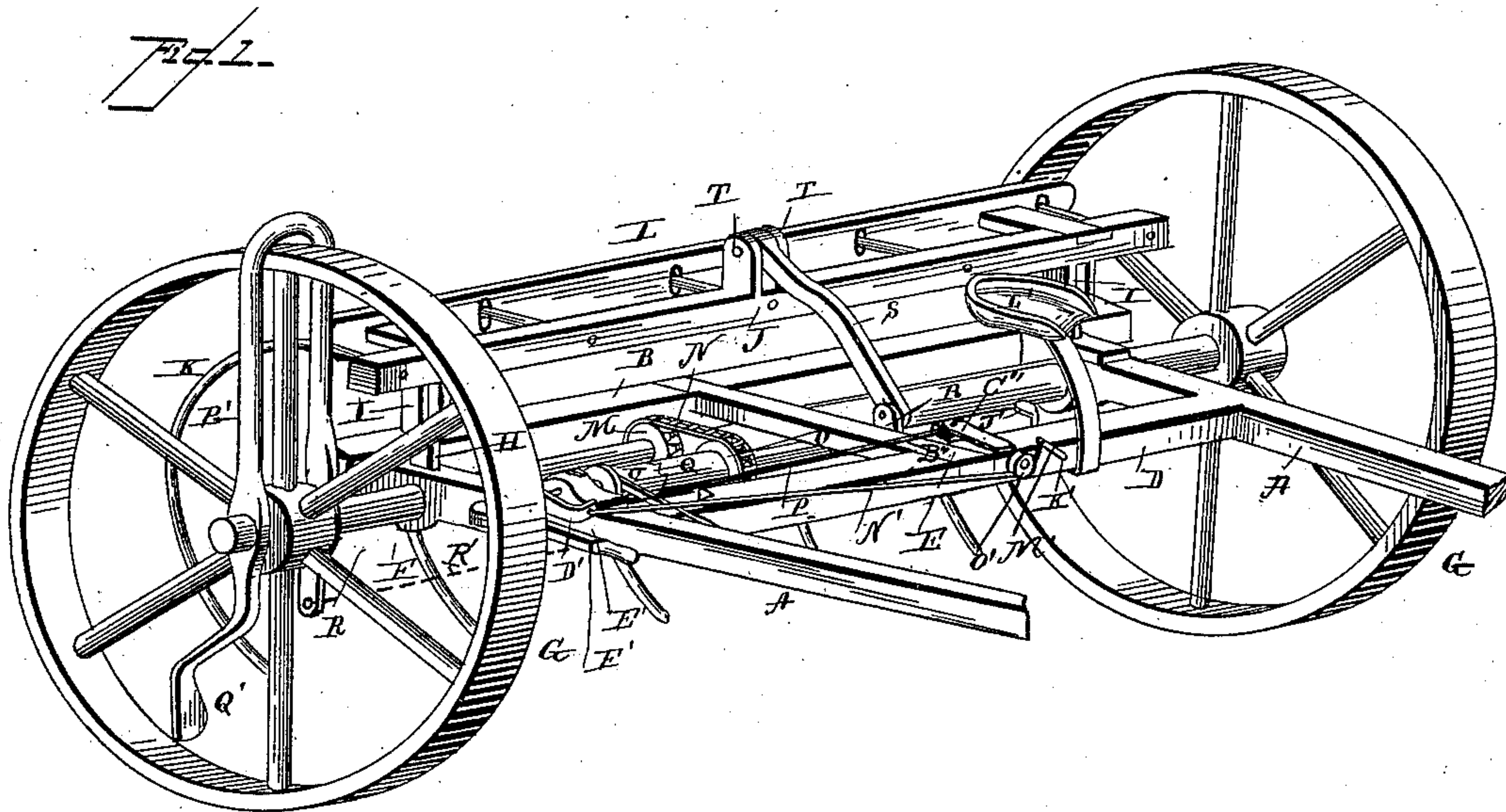
J. H. FELT.

2 Sheets—Sheet 1.

HAY RAKE.

No. 351,630.

Patented Oct. 26, 1886.



WITNESSES
F. L. Ourand
Edward Stanton

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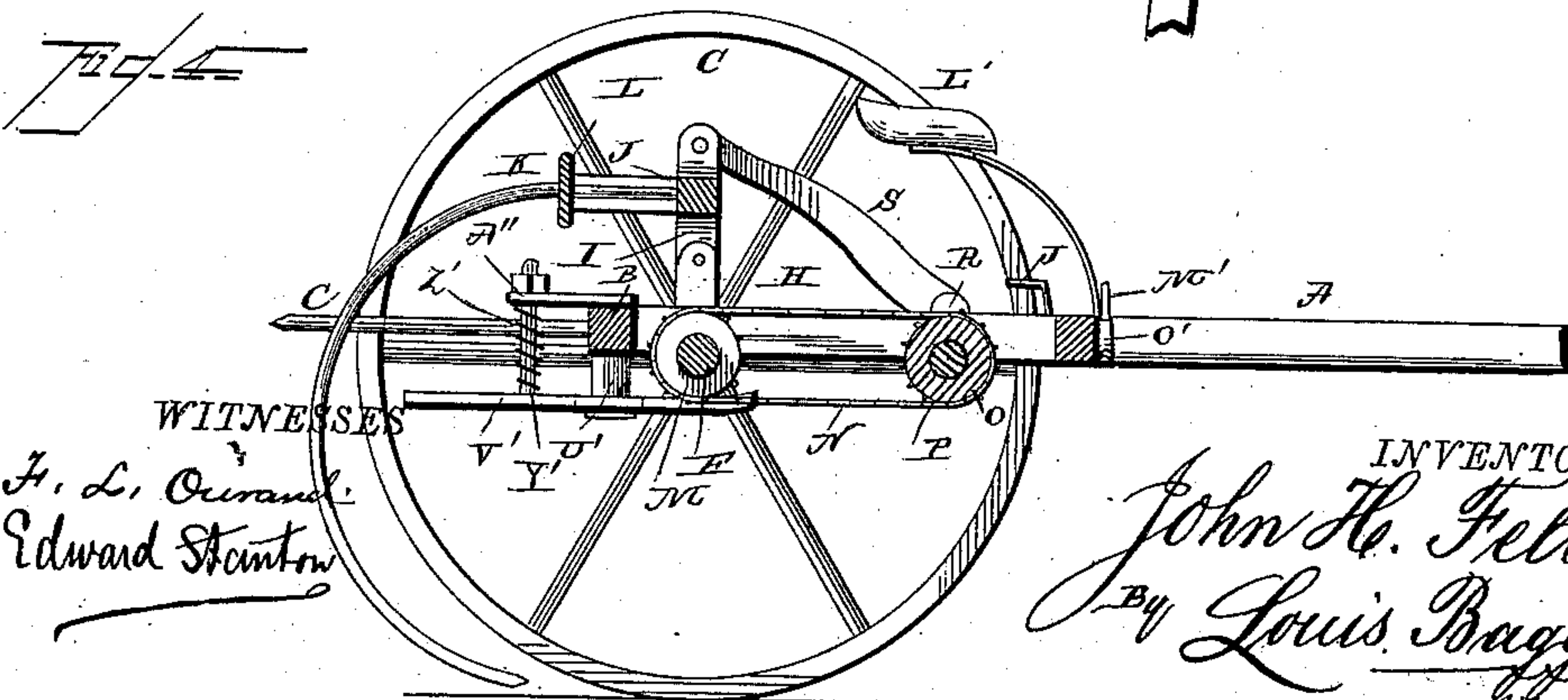
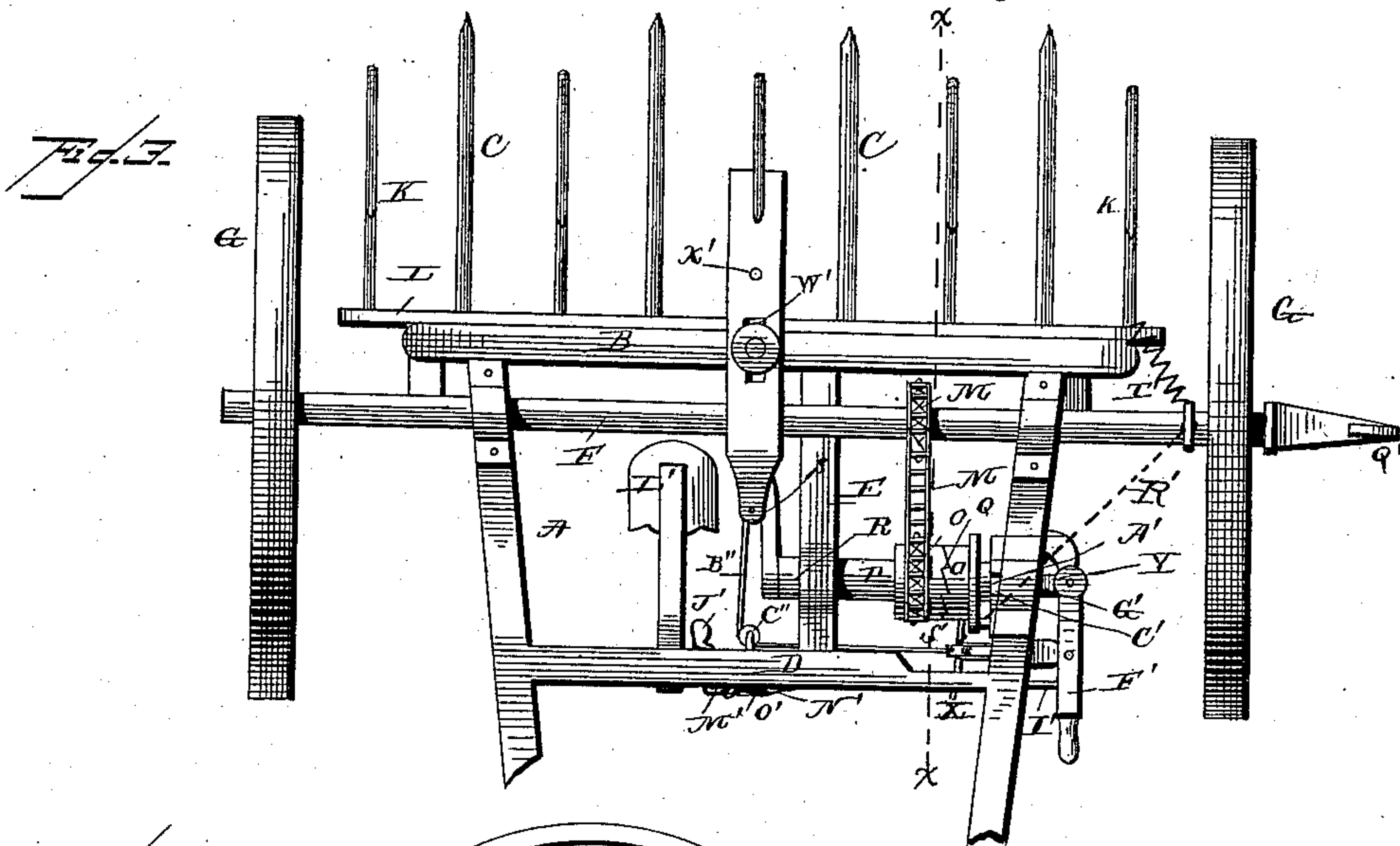
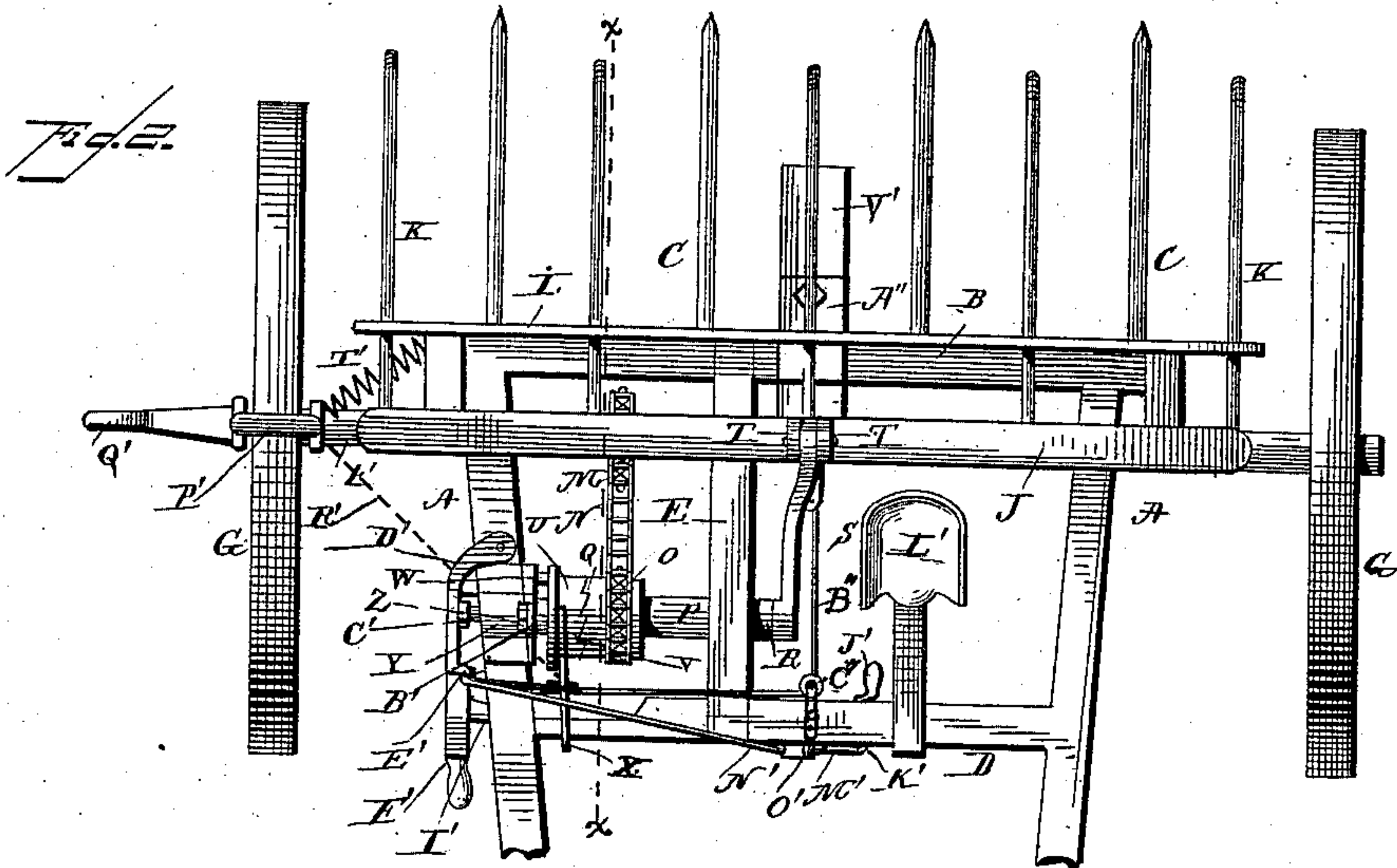
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UNITED STATES PATENT OFFICE.

JOHN H. FELT, OF GREENFIELD, INDIANA.

HAY-RAKE.

SPECIFICATION forming part of Letters Patent No. 351,630, dated October 26, 1886.

Application filed March 9, 1886. Serial No. 194,539. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. FELT, a citizen of the United States, and a resident of Greenfield, in the county of Hancock and State of Indiana, have invented certain new and useful Improvements in Hay-Rakes; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to 10 which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of my improved horse hay-rake. Fig. 2 is a top view of the same. Fig. 3 is a bottom view. Fig. 4 is a vertical sectional view on line *x x*, Figs. 2 and 3. Fig. 5 is a perspective detail view of the trip mechanism, and Fig. 6 is an axial 20 sectional view of the same.

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

My invention has relation to self-dumping hay-rakes; and it consists in the improved 25 construction and combination of parts of the same, as hereinafter more fully described and claimed.

In the accompanying drawings, the letters A A indicate the thills of the rake-frame, 30 which are connected at their rear ends by a cross-head, B, bearing the clearer-teeth C, and at a distance from their rear ends by means of a cross-piece, D, having a longitudinal frame-piece, E, connecting the cross-piece and the 35 cross-head near their middles.

The axle F is journaled in bearings under the rear ends of the thills, and has the wheels G G secured to its ends, and the upper sides of the rear ends of the thills are provided with 40 perforated lips H, upon which lips I, projecting downward from the rake-head J, are pivoted, the said rake-head having the curved teeth K and a re-enforcing cross piece or bar, L, through which the teeth pass.

45 The axle is provided with a chain-wheel, M, over which passes a chain, N, which passes over a similar chain-wheel, O, upon a shaft, P, journaled in bearings in one of the thills and the frame-piece E. The chain-wheel 50 turns freely upon this trip-shaft, and is formed upon its outer face with a number of ratchet-teeth, Q, forming a half-clutch, and the inner

end of the trip-shaft is provided with a crank, R, to which the forward end of a connecting-rod, S, is pivoted, the rear end of which connecting-rod is pivoted between two perforated 55 lips, T T, upon the upper side of the rake-head. A half-clutch, U, having registering ratchet-teeth, slides upon a feather or key upon the trip-shaft, turning with it, and is formed 60 with a flange, V, and with a lug, W, projecting from its outer face and registering with the crank upon the shaft.

A spring, X, is secured at its forward end to the cross-piece connecting the thills, and 65 the rear end of this spring engages the flange on the half-clutch, forcing it outward, and the inner face of the bearing Y upon the thill, in which the outer end of the trip-shaft is journaled, is formed with notches Z and A'—one at 70 the upper and one at the lower portion of the said face of the bearing, diametrically opposite to each other—and the lug upon the outer face of the half-clutch may enter either of these 75 notches.

The square head B' upon the inner end of a 75 bolt, C', fits and slides in the upper notch, the bolt sliding in a transverse perforation in the upper portion of the bearing, and having its outer end projecting at the outer face of the 80 same. The inner edge of an arm, D', bears against the said outer end of the bolt, and the arm is pivoted at its inner end upon the upper side of the thill to the rear of the bearing, and has its forward end bent inward, as shown 85 at E'.

A lever, F', is fulcrumed upon the outer side of the thill, and has its rear end provided with an inwardly-projecting bolt, G', pivoted to the said end and sliding in a perforation, H', in 90 the lower portion of the bearing in the thill, the said bolt projecting with its inner end into the lower notch, and a pin, I', projects from the outer side of the thill forward of the fulcrum of the lever, so that the forward arm of 95 the lever may bear against the end of the pin, holding the bolt forced inward and filling the notch with its inner end. It will now be seen that when the forward end of the bent arm is drawn inward the square head of the sliding 100 bolt will force the lug upon the outer face of the half-clutch out of the upper notch, in which it normally fits when the teeth are upon the ground, and the teeth of the half-clutches will

engage each other, and the half-clutch will be revolved together with the chain-wheel, causing the trip-shaft to revolve, and the crank upon the inner end of the same. The revolving crank will, through the connecting-rod, draw the rake-head forward, dumping the hay within the teeth and thereupon again force the teeth down, and the lug upon the outer face of the half-clutch will keep the teeth of the half-clutch and of the chain-wheel engaged, by forcing the half-clutch toward the wheel as it bears against the inner face of the bearing, until the lug arrives at the upper notch, when the spring bearing against the half-clutch will force the said half-clutch outward and cause the lug to enter the notch.

When the rake is to be transported from one place to another, and the rake-teeth are to be kept permanently raised, the forward end of the hand-lever is raised slightly to disengage it from the pin, and the handle of the same drawn inward, when the bolt in the lower notch will be withdrawn from the said notch, and the lug of the half-clutch, which has been revolved in the usual manner, will enter the said lower notch and remain there until the hand-lever is again pushed out to engage the pin, and the teeth will be raised when the lug remains in the notch, as the said lug registers with the crank upon the inner end of the shaft, so that when the lug is in its lower position the crank is in a corresponding position.

The arm which forces the bolt inward and thus causes the half-clutch to engage with the chain-wheel may be drawn inward by three different means, which I prefer to employ all together upon one rake, while, however, rakes may be constructed with any one of the three means for operating the dumping mechanism.

A treadle, J', projects upward from a short rock-shaft, K', which is journaled in a longitudinal bearing in the cross-piece of the thills below the driver's seat L', and the outer end of the shaft is provided with an arm, M', to the end of which is secured a cord or chain, N', which passes under a pulley, O', upon the forward side of the cross-piece, and is secured at its other end to the inwardly-bent end of the arm operating the trip mechanism. By means of this device the rake may be tripped by tilting the treadle by the foot at any desired place.

A U-shaped frame, P', is pivoted near its lower ends upon the axle straddling the wheel, and the end Q' of the outer arm of this frame projects to the side and downward, so that it may be engaged by the hay of a windrow and be tilted rearward, and a cord or chain, R', is secured to the lower end of the inner arm and passes over pulleys S' to the end of the arm operating the trip mechanism.

It will be seen that when the outer arm strikes the end of a windrow the arm will be tilted, and the inner arm will draw upon the cord or chain, drawing the arm inward and throwing the trip mechanism into gear.

A spring, T', is secured to the upper portion of the inner arm of the frame and to the cross-head having the clearer-teeth, and this spring will serve to draw the frame back again when the rake has passed the windrow. A stud, U', projects from the middle of the cross-head having the clearer-teeth, and has a bar, V', with a longitudinal slot, W', sleeved upon its lower end, and the rear part of this flat bar has a perforation, X', through which passes the lower end of a rod, Y', which is provided with a coiled spring, Z', wrapped around it, and the upper end of which passes through a perforated lip, A'', projecting from the upper side of the cross head, the spring bearing against the rear of the flat bar and against the lip, forcing the arm down. The forward end of the bar is provided with a cord or chain, B'', which passes over pulley C'', and is secured to the end of the arm operating the trip mechanism. It will now be seen that as the hay collects in the rake it will bear against the rear arm of the flat bar, forcing the said arm up and the forward arm down, causing the said forward end to draw the cord or chain connecting it to the arm operating the trip mechanism, so that the said mechanism will be placed in gear and the hay dumped, when the arm will resume its normal position until the rake is again full.

The treadle is preferably used with either of the devices for operating the trip mechanism, so that the rake may be tripped, if the other devices should fail; or all three devices may be employed upon the rake, the cords or chains from the devices not in use being detached.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a self-dumping horse hay-rake, the combination of a frame having transverse bearings, a notch in the upper portion of the inner face of the outer bearing, a shaft having a crank at one end connected to the rake-head and journaled in the bearings, a chain-wheel having connection with the axle of the rake-wheels, and having a number of ratchet-teeth upon its outer face, a half-clutch sliding upon and turning with the shaft and having a spring for forcing it outward and a lug projecting from its outer face, a bolt sliding in a transverse perforation and having a square head at its inner end fitting and sliding in the notch in the face of the bearing, and an arm bearing against the outer end of the bolt and having means for forcing it inward, as and for the purpose shown and set forth.

2. In a self-dumping horse hay-rake, the combination of a frame having transverse bearings, and having a notch in the upper portion of the inner face of the outer bearing, a shaft having a crank at its inner end connected to the rake-head and journaled in the bearings, the axle of the rake having a chain-wheel upon it, a chain-wheel upon the shaft having a

chain connecting it to the wheel upon the axle, and having ratchet-teeth upon its outer face, a flanged half-clutch having ratchet-teeth upon its inner face and a lug upon its outer face, and
 5 sliding upon and turning with the shaft, a spring engaging the flange of the half-clutch with its outer end, forcing it outward, a bolt having its inner square head sliding in the notch, and having its outer end projecting out-
 10 side of the bearing, and an arm bearing against the outer end of this bolt, as and for the purpose shown and set forth.

3. In a self-dumping horse hay-rake, the combination of the thill-frame, the axle jour-
 15 naled at the rear end of the same and having a chain-wheel upon it, the rake pivoted upon the thill-frame, a bearing upon one thill having two diametrically-opposite notches in the upper and lower portions of its inner face, a trip-
 20 shaft journaled with its outer end in the said bearing and having a crank at its inner end, a connecting-rod between the crank and rake-head, a chain-wheel turning upon the shaft and having a chain passing over the wheel upon the
 25 axle and formed with ratchet-teeth upon its outer face, a flanged half-clutch turning with and sliding upon the shaft and having a lug upon its outer face registering with the crank, a spring engaging the flange of the half-clutch
 30 with its inner end and forcing it outward, a bolt sliding above the bearing and having its inner end provided with a square head fitting and sliding in the notch, an arm having its inner edge bearing against the outer end of the
 35 bolt, and having a chain at its outer end, a treadle having the chain attached to an arm upon its shaft and journaled with the shaft

upon the frame, and a lever pivoted upon the side of the thill and having its rear end provided with a bolt pivoted to it and sliding with
 40 its inner end into the lower notch, filling it up, and having means for holding the forward arm of the lever out, as and for the purpose shown and set forth.

4. In a self-dumping horse hay-rake, the
 45 combination, with the tripping mechanism, of a U-shaped frame pivoted near the lower ends upon the axle, straddling the wheel and having the lower end of the outer leg bent outward, and having the lower end of the inner leg con-
 50 nected to the tripping mechanism and provided with a spring secured to the upper portion of the inner leg and to the rear portion of the rake-frame, as and for the purpose shown and set forth. 55

5. In a self-dumping horse hay-rake, the
 combination, with the tripping mechanism, of the rake-frame having a rearwardly-projecting perforated lip, and having a downwardly-pro-
 60 jecting stud, a flat bar having a longitudinal slot and sleeved upon the end of the stud, and having a cord connecting it to the trip mechanism, and a rod passing through the perforated lip and through the rear part of the bar and having a spring coiled around it between
 65 the lip and bar, as and for the purpose shown and set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

JOHN H. FELT.

Witnesses:

EDWARD W. FELT,
 M. E. CURRY.