(No Model.) 2 Sheets—Sheet 1.

H. L. BANTA.

HAY RAKE.

No. 421,891. Patented Feb. 25, 1890.

Fig. 1.

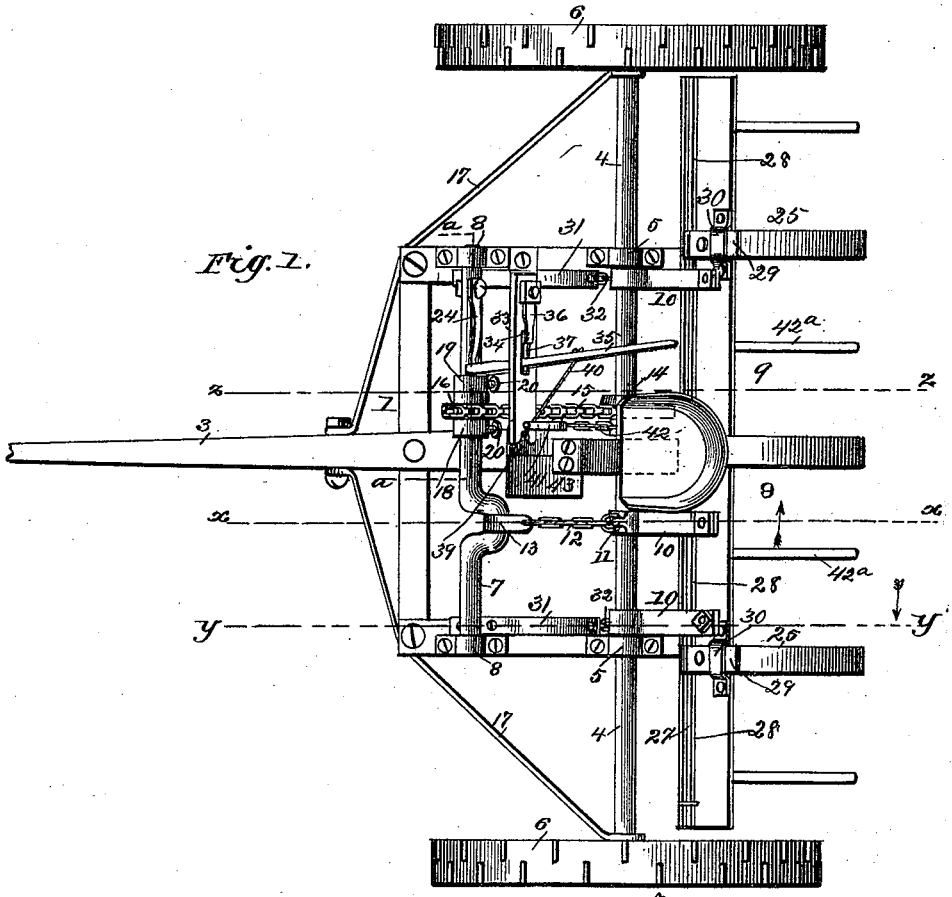
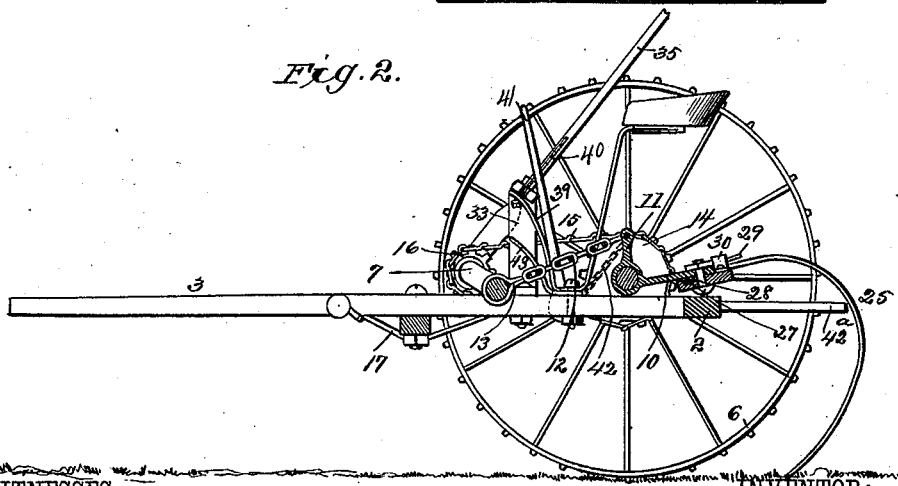


Fig. 2.



WITNESSES:

Fred G. Dieterich

Jos. A. Ryan

INVENTOR:

Henry L. Banta.

BY Munn & Co

ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

H. L. BANTA.

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Fig. 3.

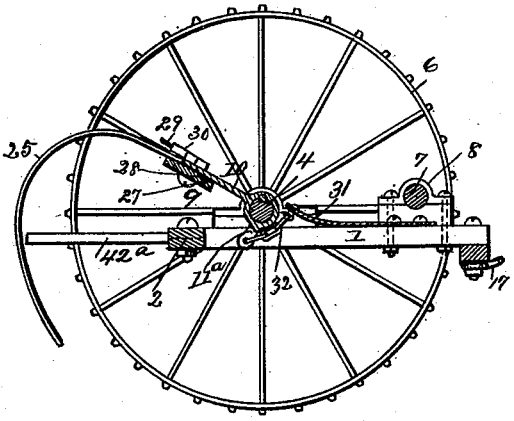


Fig. 6.

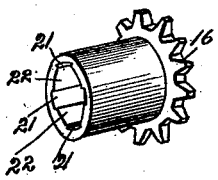


Fig. 5.

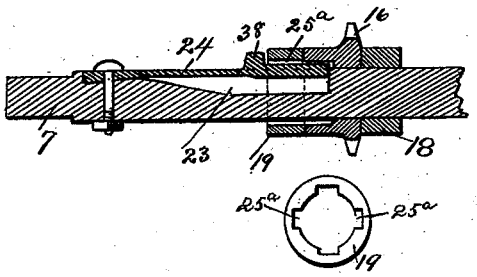


Fig. 4.

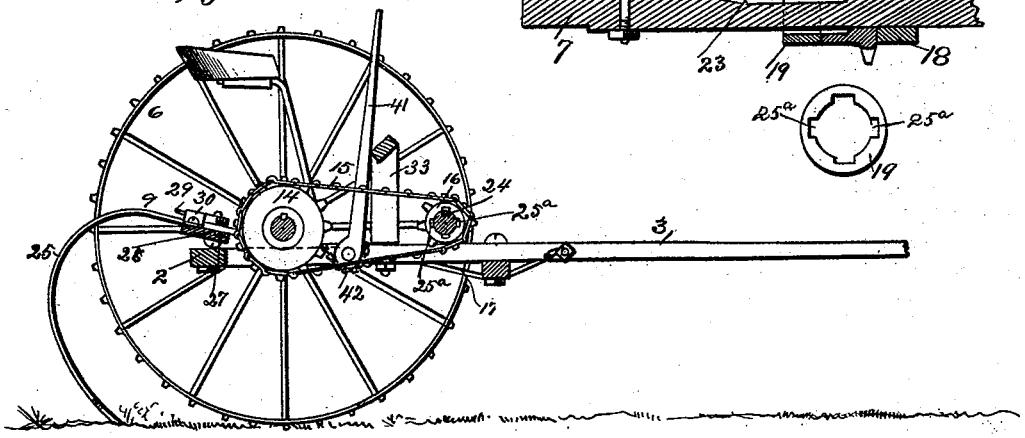


Fig. 8.

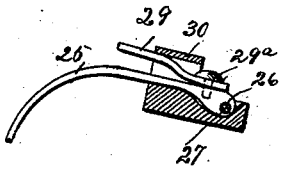
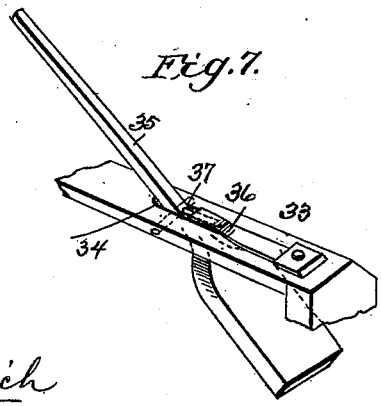


Fig. 7.



WITNESSES:

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INVENTOR:

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ATTORNEYS.

UNITED STATES PATENT OFFICE.

HENRY L. BANTA, OF CAÑON CITY, COLORADO, ASSIGNOR OF ONE-HALF TO CHARLES W. BANTA, OF SAME PLACE.

HAY-RAKE.

SPECIFICATION forming part of Letters Patent No. 421,891, dated February 25, 1890.

Application filed January 21, 1889. Serial No. 297,082. (No model.)

To all whom it may concern:

Be it known that I, HENRY L. BANTA, of Cañon City, in the county of Fremont and State of Colorado, have invented a new and useful Improvement in Hay-Rakes, of which the following is a specification.

My invention consists in a new and improved hay-rake which can be used either as a self-dumping or a hand-dumping rake; and my invention will be hereinafter fully described and claimed.

Referring to the accompanying drawings, Figure 1 is a top plan view of my new and improved hay-rake, showing the rake-teeth in their lowered position. Fig. 2 is a vertical sectional view taken on line *x x* of Fig. 1. Fig. 3 is a vertical sectional view taken on line *y y* of Fig. 1. Fig. 4 is a vertical sectional view taken on line *z z* of Fig. 1. Fig. 5 is a longitudinal sectional view taken on line *a a* of Fig. 1. Fig. 6 is a detail view of the clutch-pinion, and Fig. 7 is a detail view of the clutch-lever and the spring which holds it in its operative position. Fig. 8 is a sectional detail view showing one of the rake-teeth and its spring.

The same numerals of reference indicate corresponding parts in all the figures.

Referring to the several parts by their designating numerals, 1 indicates the square frame of the rake, the rear cross bar or piece 2 of this frame extending out at its ends, so that it is of the same length as the head of the rake, to which the teeth of the same are secured.

3 indicates the tongue.

4 indicates the axle, having at its ends the supporting and drive wheels 6. I prefer to employ main wheels 6, formed with the usual spurs on their outer faces to prevent them from slipping in use. The axle is supported on the side pieces of the frame 1 in metallic boxes 5 5, as shown.

7 indicates a crank-shaft, which is supported and turns at its ends in metallic boxes 8 8, which are secured upon the side pieces of the frame 1 near the forward ends of the same.

9 indicates the rake proper, the longitudinal head of the rake being supported on the axle 4 by the metallic brackets 10 10, these brackets being formed with the short projecting arms 11 11^a. One of the upwardly-extending arms 11 is connected by a short chain 12 with the crank of the crank-shaft 7 through a collar 13, which turns freely on the crank of the shaft.

Upon the axle 4 is immovably secured a sprocket-wheel 14, which is connected by a chain belt 15 with a sprocket-pinion 16, which is mounted on the crank-shaft in the manner which will be hereinafter described.

On each side of the tongue are secured iron braces 17 17, which run back and have their rear ends curved around the axle near the ends of the same, thereby forming shoulders for the main wheels to bear against. Upon the crank-shaft 7, to the right of the tongue, is loosely mounted the sprocket-pinion 16, between two collars 18 19, the said collars being held from moving by set-screws 20. The inner side of the pinion-hub is formed with a series of recesses or notches 21, having the shoulders 22. The crank-shaft is formed with a longitudinal recess or opening 23, extending under the sprocket-pinion, and at the outer end of this recess is secured the outer end of a spring-key 24. This spring-key extends in the longitudinal recess 23, and its spring normally holds its inner squared end up, so that it fits in and engages one of the notches in the interior of the pinion-hub, as shown in Fig. 5, and thereby normally prevents the pinion from turning loosely on the crank-shaft, causing the said shaft to turn with the pinion. The outer collar 19 is recessed on its inner side at 25^a, above the recess 23, to permit the inner end of the spring-key 24 to rise to engage with the pinion-hub.

25 indicates the curved metallic rake-teeth, which are thickened at their upper fixed ends and there formed with the transverse perforation 26. These teeth are all secured upon the rake-head by means of a single metal rod 27, which passes through the perforated thickened end of each tooth and lies and is secured in a longitudinal recess 28 in the upper side of the rake-head, as shown, the thickened ends of the teeth themselves resting in transverse recesses in the upper side of the rake-head. The rake-teeth are made larger at their upper ends to render them stronger, to enable the perforation 26 to be made, and

to permit of a small spring 29 being secured at one end upon the said end of the tooth by a screw 29^a. A small bracket 30 is secured upon the rake-head over each tooth, and the free end of each spring 29 is curved up, so as to bear against the under side of the raised bracket. The object of this arrangement is, while holding the points of the teeth in contact with the ground, to allow them to spring up over stones and other slight obstructions and then press them down again in contact with the ground, as will be readily understood.

Upon the side pieces of the frame 1 are bolted the lower ends of springs 31 31, the rear free ends of which curve up, and these ends are connected by chains 32 32 with the downwardly-extending arms 11^a of the two brackets 10 10, as shown. It will be seen that these springs 31 will operate continually to pull the rake-teeth down, and will bring the teeth down again after they have been raised either automatically or by hand, thus making the rake clean without any foot-pressure.

When the machine is in operation, the axle is turned by the main wheels, and through the sprocket-wheel 14, chain belt 15, and sprocket-pinion 16 turns the crank-shaft 7 in the same direction as long as the spring-key 24 is engaged with the recessed hub of pinion 16. As the rake is drawn forward the rake-teeth are held down in operative position by the action of the springs 31, and it will be seen that as the crank-shaft is rotated it will, through the chain 12, raise and again lower the rake-teeth smoothly and evenly without any jar or shake, the collar 13 turning evenly around the crank of shaft 7.

33 indicates a large bracket or casting, bolted at one end upon the tongue and at the other upon the right side of frame 1. In the top of this bracket is formed a longitudinal slot 34, in which is pivoted a gearing-lever 35, the lower end of which extends down closely over the crank-shaft. This lower end is held normally against the outer side of collar 19 by a spring 36, bolted at one end on top of the bracket 33 and bearing down with its free end upon a pin 37, which projects from the side of the lever 35 above the pivotal point of the same. The spring-key 24 has a projection or knob 38 on its outer side, and it will be seen that when the crank-shaft is revolved and raises the rake at the moment when the rake is lowered the said knob 38 of the spring-key will pass under the lower end of the lever 35, and the key 24 will be thus forced down in the shaft-recess in which it works until its inner end is freed from the notched pinion-hub, when the pinion 16 will turn loosely on the crank-shaft without turning the said shaft. The rake will thus remain down in its lowered position until the operator draws the upper end of the gearing-lever 35 toward him, thus freeing the projection of the spring-key 24 and allowing the inner end of the key to engage again with the notched pinion-hub, when the crank-shaft will be again turned to raise the rake-teeth. The operator draws the upper end of lever 35 toward him either by hand or by pressing with his foot a foot-spring 39, the free upper end of which is connected by a chain 40 with the upper part of lever 35. The rake is thus automatically dumped, as above described; but it can be dumped by hand, as in shocking, by a hand-lever 41, which is connected by a chain 42 with the upwardly-projecting arm 11 of one of the brackets 10, as shown.

The rear cross-piece 2 of the frame 1 is at such a distance back of the axle that the long rake-head rests upon and is supported on it when down, the said cross-piece being the same size and length as the rake-head. The rear cross-piece is also provided with the rearwardly-extending wooden fingers or pins 42^a, which serve to press the hay down as the rake-teeth are raised.

43 indicates a foot-rest.

From the foregoing description, taken in connection with the accompanying drawings, the construction, operation, and advantages of my invention will be readily understood. It will be seen that it is strong and comparatively simple in construction and exceedingly effective in its operation.

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

1. A revolving crank-shaft having the longitudinal recess, the spring-key having the outer projection, the sprocket-pinion having the recessed hub, the gearing-lever pivoted in the longitudinal slot 34 and having the side pin 37, and the spring 36, substantially as set forth.

2. A revolving crank-shaft having the longitudinal recess, the spring-key having the outer projection, the sprocket-pinion having the recessed hub, the spring-actuated gearing-lever, and the foot-spring and connecting-chain uniting it with the gearing-lever, substantially as set forth.

HENRY L. BANTA.

Witnesses:
G. G. SHAVER,
CHAS. E. WALDO.