A. C. KAISER & H. H. STANGAARD.

Horse Hay-Rake.

No. 210,859. Patented Dec. 17, 1878.

Fig. 1

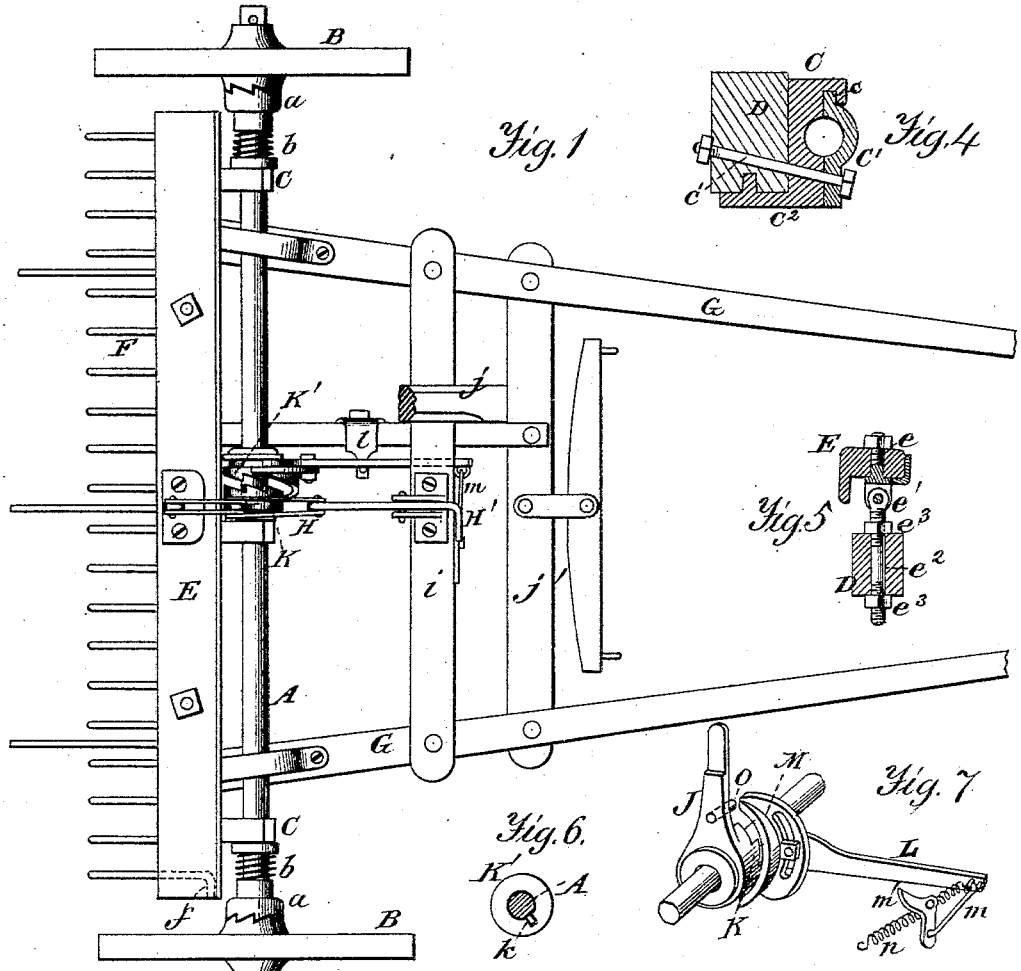


Fig. 4

Fig. 5

Fig. 6.

Fig. 7

Fig. 2.

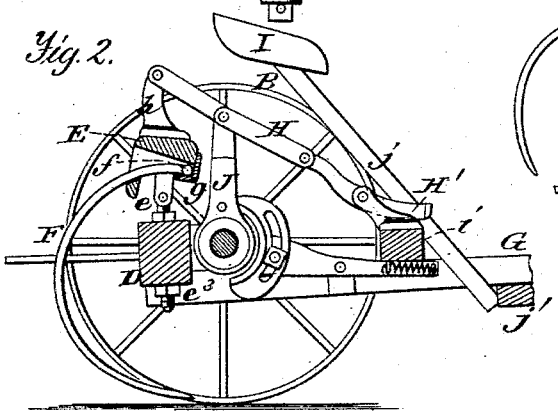
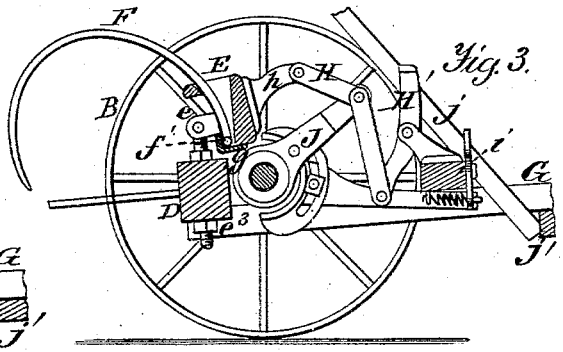


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

AUGUSTUS C. KAISER AND HANS H. STANGAARD, OF SYCAMORE, ILLINOIS, ASSIGNORS OF ONE-THIRD THEIR RIGHT TO SAMUEL ROBINSON, OF SAME PLACE.

IMPROVEMENT IN HORSE HAY-RAKES.

Specification forming part of Letters Patent No. **210,859**, dated December 17, 1878; application filed October 23, 1878.

To all whom it may concern:

Be it known that we, AUGUSTUS C. KAISER and HANS HANSEN STANGAARD, of Sycamore, in the county of De Kalb and State of Illinois, have invented certain new and useful Improvements in Horse Hay-Rakes; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification, and in which—

Figure 1 is a plan view of our improved horse hay-rake. Fig. 2 is a vertical cross-section thereof, with the teeth in position for raking the hay. Fig. 3 is a similar section of the same, with the teeth elevated for dumping their contents. Fig. 4 is a cross-section through axle-box and rake-head support. Fig. 5 is a sectional and side elevation of rake-head hinge. Fig. 6 is a transverse section, showing the holding-pin of one half of the clutch; and Fig. 7 is a detailed perspective view of one half of the clutch, a portion of the axle, and the cam attached to the forked clutch-operating lever.

Corresponding parts in the several figures are denoted by similar letters of reference.

This invention relates to certain improvements in horse hay-rakes; and it consists, first, in the means employed for supporting the axle and connecting it to the rake-head support; secondly, in the connecting of the rake-head to a clutch on the axle of the transporting-wheels, themselves clutched to the axle, which first-mentioned clutch has a projection or stud engaging a cam on the clutch-separating lever; and in the particular construction of the rake-head hinge, substantially as hereinafter more particularly set forth and claimed.

In the annexed drawing, A refers to the axle, of the usual round form, having the wheels B, and supported in bisected boxes C C′, bolted to the rake-head support D, as presently set forth. The axle A is connected to the wheels B B by the clutches *a a*, acted upon by springs *b b*, which also allow the sliding portions of the clutches on the axle to yield when the motion of the rake is reversed, and thus prevent the turning of the axle, as is the case when the rake is drawn forward.

The sections of the bisected axle-boxes C C′ are formed, one with a socket, *c*, at its upper end, into which socket the upper end of the other section, C′, is inserted, while the lower end of the latter-mentioned section, C′, is bolted, as at c^1, to the support D, the bolt c^1 passing diagonally in an upward direction through the lower part of the section C. This section is provided, at its lower end, with a rearwardly-projecting plate or flange, c^2, fitting against the under side of the support D, which flange is drawn tightly up against said side of the support by the upward inclination and tightening of the bolt or bolts c^1. By the simple removal of the nuts of the bolts c^1, the boxes can be removed from the support, and the axle when occasion requires.

E is the rake-head, which is hung upon the support or bar D by means of clips *e*, bolted to said head, and having each a bolt or axis, e^1, extending across from each side of the clip, which bolt passes through an eyebolt, e^2, passing through and secured to the support D by jam-nuts e^3 e^3. By this arrangement the rake-head can be readily taken off the rake and the parts of the hinge taken apart. This feature is clearly illustrated in Fig. 5.

F F are the rake-teeth, each individual tooth having a right-angled bent portion, *f*, which rests upon a plate, *g*, fastened to the head E, and having a rearwardly and upwardly extending portion or flange, confining the teeth in place. Each tooth has a limited independent movement, as is desired. The upper or inner ends of the teeth are further supported in perforations in the outer end of the head E, through which they pass, as clearly seen in Figs. 2 and 3.

The rake-head E is provided with an upwardly-projecting arm, *h*, which is connected to a front foot-piece, *i*, of the rake-shafts G by a system of jointed links or levers, H H′, that one pivoted to the foot-piece *i* being a foot-lever, to enable the holding of the rake down in position for raking the hay, to be controlled by the foot of the driver mounted upon the

seat I, suitably secured by a support, *j*, to a cross-piece, *j'*, between the shafts G.

J is a lever or arm, attached to the loose half or section K of a clutch fitting upon the axle A, and caused to turn with the axle and depress its lever J sufficiently to elevate the rake, to which said lever is connected through the system of jointed levers or links H H', as clearly seen in Figs. 2 and 3. In this event the foot is removed from the lever H', allowing the levers H H' to fold together, as seen in Fig. 3. K' is the sliding half or section of the clutch, adjusted to the axle, as indicated at *k*, Fig. 6. It is when this section or half of the clutch is moved up to and caused to engage with the clutching-section K, as presently described, that the latter is caused to turn with the axle and depress the rake-unloading lever J.

L is another lever, fulcrumed at *l*, or to a plate fastened to a bar of the frame of the rake. The inner end of this lever is concaved, to adjust it in an annular groove or collar on the clutching-section K, and is provided with a vertically-adjustable cam, M, the object of which will be seen directly. The outer end of this lever is linked or hooked laterally, as at *m*, Figs. 1 and 7, to a foot-crank, *m'*. This end of said lever is also provided with a spring, *n*. The lever J is provided with a stud or projection, *o*, which acts on the cam M.

It will be observed that when the foot is applied to the crank *m'* the lever L will be so affected as to cause the clutching-section K' to engage with the clutching-section K, which will cause the lever J to be depressed, and elevate the rake with its load of hay. When the lever J has been sufficiently depressed to empty the contents of the rake, the stud or projection *o* will, by striking the cam M, disengage the clutching-section K' from K, and thus trip the lever J, and allow the rake to instantly return to a lowered position, to take up another load.

The rake, when full, is elevated by placing the foot and pressing down upon the crank *m'*, which, through its connection *m*, will press the clutching-section K' into contact with its fellow K. The result follows as above set forth.

The cam M is made adjustable, to suit different conditions of hay.

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

1. The bisected axle-box C C', bolted to the support D, with the bolt extending in an upwardly-inclined position, with or without the flange c^2, substantially as and for the purpose set forth.

2. The rake-head hinge consisting of the clip *e*, having an axis, e^1, passing through an eyebolt, e^2, secured in place by jam-nuts e^3, substantially as and for the purpose set forth.

3. The clutch K K' on the driving or transporting wheel axle, the part K' having an adjustable cam and a lever, L, and the part K provided with a projection and a lever, J, in combination with the jointed, pivoted, and locking levers and the rake-head, substantially as and for the purpose set forth.

4. The combination, with the lever J on the axle A, of the adjustable cam M, to limit the throw of the rake-head, substantially as and for the purpose set forth.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

AUGUSTUS C. KAISER.
HANS HANSEN STANGAARD.

Witnesses:
S. T. ARMSTRONG,
WILLIAM H. S. BEAVENS.