

(No Model.)

F. D. & J. S. MERCER.
HARVESTER BINDER.

No. 425,139.

Patented Apr. 8, 1890.

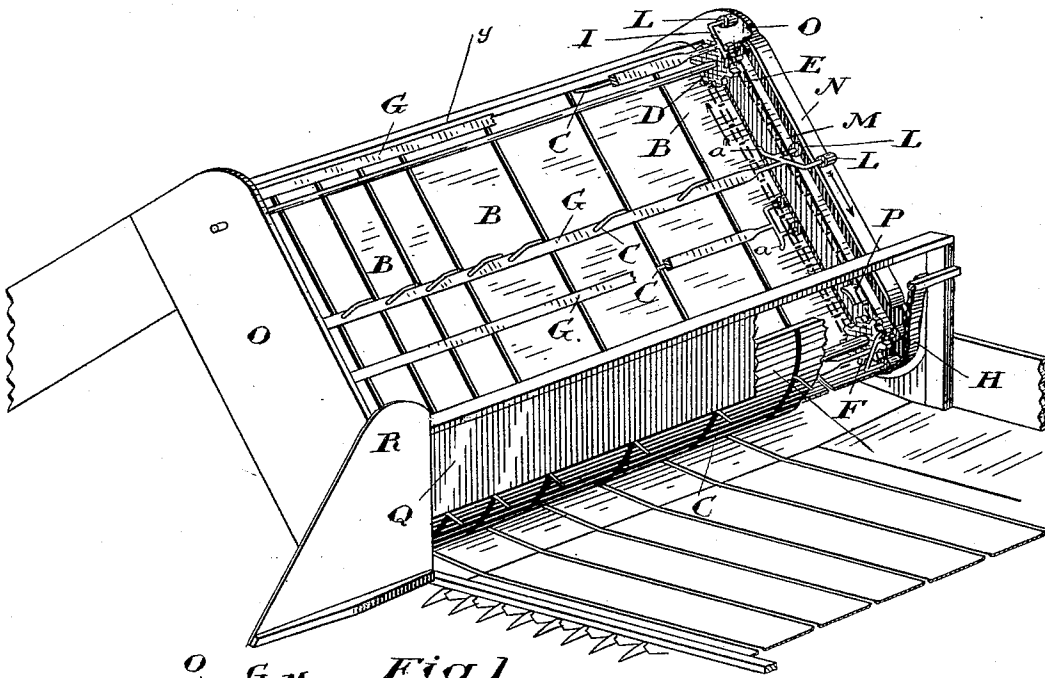


Fig. 1.

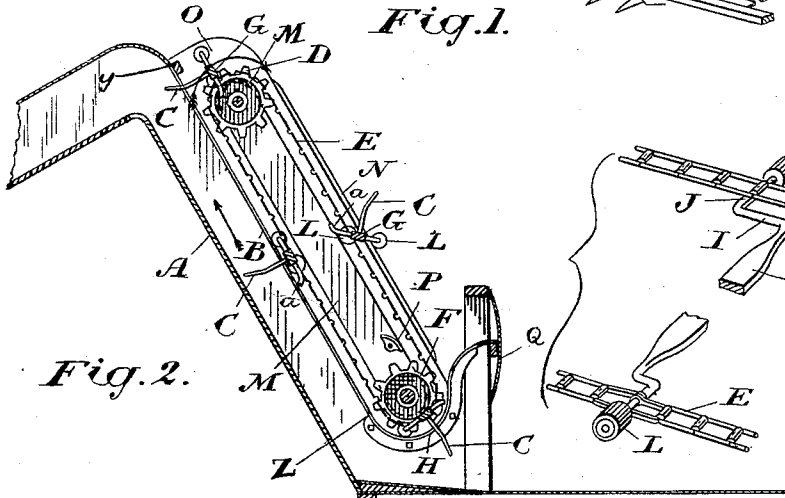


Fig. 2.

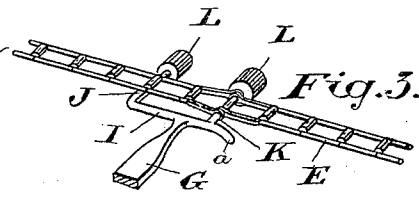


Fig. 3.

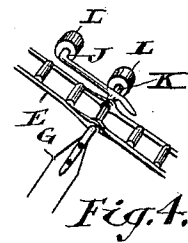


Fig. 4.

Witnesses.

J. Edw. Maybee.
W. G. McMillan

Inventors

Fred. S. Mercer
John S. Mercer
By Donald C. Ridout
att'y

UNITED STATES PATENT OFFICE.

FREDERICK D. MERCER AND JOHN S. MERCER, OF DEREHAM, ONTARIO,
CANADA.

HARVESTER-BINDER.

SPECIFICATION forming part of Letters Patent No. 425,139, dated April 8, 1890.

Application filed January 30, 1889. Serial No. 298,099. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK DUNCAN MERCER and JOHN SMITH MERCER, both farmers, and both of the township of Dereham, in the county of Oxford, in the Province of Ontario, Canada, have jointly invented certain new and useful Improvements in Harvesters, of which the following is a specification.

The invention relates to that class of harvesters in which rake-heads carried on endless chains or bands are substituted for the elevating-canvas employed in other classes of harvesters.

The object of the invention is to form and arrange the elevating-rakes in such a manner that the grain shall be freely elevated from the grain-table to the top of the elevator, and without any danger of clogging the elevating mechanism; and it consists, essentially, in arranging a series of peculiarly-formed rake-heads on endless chains or bands carried around suitable sprocket-wheels or pulleys located above the back of the elevating-slide and between its side-boards, the teeth on the rake-heads being designed to project downwardly toward the back of the elevator while in the act of elevating, sufficient space being left between the back of the elevator and the rake-heads to allow of the free movement of the grain upwardly toward the point where the grain is discharged onto the binding-table, near which point the upper sprocket-wheels or pulleys carrying the chains or bands are located, so that in passing around the sprocket-wheels or pulleys each rake-head is carried from the grain-table, thereby withdrawing the rake-teeth from the grain at the point where they should cease to elevate, the whole being constructed substantially in the manner herein-after more particularly explained.

Figure 1 is a perspective outside view of the elevator, showing the mechanism connected with our invention. Fig. 2 is a sectional side elevation of the elevator and mechanism connected therewith. Fig. 3 is a detail of the rake-head and elevating-chain. Fig. 4 represents an alternative form of rake-head.

In the drawings, A represents the back of

the elevating-slide, and B the deck-strips, sufficient space being left between each strip to permit the passage of the rake-teeth C while in the act of elevating. The deck-strips B are placed a little below the upwardly-passing rake-heads, sufficient space being left between the deck-strips and the back A of the slide to allow of the free upward movement of the grain. The strips B are attached to the lower part of the shield or curved guide H, near the point Z, (see Fig. 2,) the other end of each strip being fastened to the cross-bar y at the top of the elevator deck or table. (See Figs. 1 and 2.)

Although we prefer to use deck-strips B extending the full length of the elevator it is not absolutely necessary that they should extend below the upper sprocket-wheel D, which is located substantially at the point indicated. On each side of the elevator, within the side-boards, there is an endless chain or band E, carried around the sprocket-wheel or pulley D and around a similar sprocket-wheel or pulley F, located at the bottom of the elevator. The rake-heads G, on which the rake-teeth C are fixed, are attached to the endless chains E, and when the machine is in operation they are caused to travel in the direction indicated by arrows. It will be noticed that ample space for the upward passage of the grain is left between the back A and the elevating-chains E, and that the teeth C project into the said space while in the act of elevating.

With the view of supporting the deck-strips B when they are used we place a shield H across the bottom of the elevator, and carry the said shield or guide below the bottom sprocket-wheel F, leaving just sufficient space for the grain to pass below the said shield or guide, where it is acted upon by the elevating-teeth. It will be noticed that on one end of the rake-head G we form a cross-head I, from which two spindles J and K project, and rollers L are journaled on the end of each spindle. The chain E is preferably connected, as shown in Fig. 3, by means of clevis-links to one of these spindles K, while the other spindle J is free. The opposite end of the rake-head is similarly connected to its chain,

but has merely a single crank-spindle. We may mention that the chain E might be connected to the end of the rake-head G on the inner side of the cross-head I, as shown in Fig. 4, without affecting the operation of the rake-head.

When the machine is in operation, the rollers on the ends of the spindles on the rake-heads moving upwardly pass between the deck-strips B and the facing-plate M, which form a guideway for the rollers, the forward roller pressing against the deck strip or plate, while the rear roller presses against the facing-plate, thus holding the rake-teeth in proper position while they are in the act of elevating. When the deck-strips are not used, a strip may be placed opposite to and below the facing-plate for the purpose of forming a guide for the rollers while the rakes are in the act of elevating. As the rake-head G reaches the upper sprocket-wheel D, its spindles J and K are carried over the end of the facing-plate M, thereby leaving the rake-head free to pass around the upper sprocket-wheel D, which movement withdraws the teeth C out of the grain at the top of the elevator. The spindles on the end of the rake-head being journaled in the clevis-links of the chains, the grain below will direct the forward or backward movement of the teeth. In returning to the lower sprocket-wheel F the spindle K rests on top of the facing-plate M, while the spindle J rests on top of the strip N, attached to the top of the side-board O of the elevator. The rollers L are of different sizes, the roller on the free spindle J being the smaller and the roller on the pivoted spindle K being larger and of the desired size to fit and travel snugly in the space between the strips B and facing-plate M when traveling upward and between the facing-plate M and top strip N when traveling downward. It is evident from this construction and the fact that the spindle J is free and the spindle K is pivoted to the chain that when the rake-bars reach the upper end of the carrier the free spindle J will fall back or descend, causing the rake-teeth C to contact with the shaft of the upper sprocket-wheels and sustain the spindle until the chain passes around the upper sprocket-wheel, when the spindle J and its roller will be carried above the spindle K and the roller of spindle J be caused to travel on the top plate N, which is curved at the upper end to permit the rollers to pass above it, as will be readily understood from the description and drawings. When the rake-head G passes around the upper sprocket-wheel D, the motion of the chain causes the rake-head G to turn over in passing around the sprocket-wheel D, and thus keep the spindle J leading; but in order to make this position positive we form a heel *a* on the end of the cross-head I and place a block P near the lower sprocket-wheel F, against which the heel *a* will strike, thus forcing the spindle J to lead should the rake-head

not be turned over sufficiently to cause the spindle J to lead before the heel *a* reaches the block P.

It will be observed that the sprocket-wheels and chains carrying the rake-heads are located and journaled on the inner surface of the side-boards O, above the back of the elevator, and that consequently the said side-boards are left perfectly solid, excepting the holes for the shafts and bolts. In addition to the curved shield or guide H, which is slotted to permit the passage through it of the rake-teeth C, we place a plate Q, extending from the divider R across the grain-table. The said plate, being higher than the shield or guide H, prevents the grain falling over behind the shield or guide, and also determines the point at which the rake-teeth shall act upon the grain to be elevated. It will also be observed that the facing-plate M does not extend beyond the sprocket-wheels D and F, and that the guideway formed between it and the deck-strip does not extend beyond the center of the top sprocket-wheel. In other words, there is no groove or guideway to act on the rake-heads while the teeth are being withdrawn from the grain. Consequently, the rake-heads being free at the point where the teeth are withdrawn from the grain, the teeth will move much more freely out of the grain than they would if they were held rigidly during the period that they are being withdrawn.

What we claim as our invention is—

1. In a harvester, the combination, with a series of rake-heads connected together by endless chains or bands, of sprocket-wheels journaled on the inside of the side-boards and above the back of the elevator, combined with a shield extending across the elevator and underlying the lower sprocket-wheel, substantially as and for the purpose specified.

2. In a harvester, a series of rake-heads pivoted in and connected together by endless chains carried by sprocket-wheels located at the top and bottom of the elevator, in combination with a guideway extending from the lower sprocket-wheel to a point opposite the center of the top sprocket-wheel, and the two spindles extending from the end of the rake-head, one forward relatively to the motion of the chain and the other to the rear of the axis of the rake-head, the rear spindle being swiveled in the chain and the forward spindle being free, substantially as and for the purpose specified.

3. In a harvester, a series of rake-heads connected together by an endless chain or band, each rake-head having a series of rake-teeth fixed to it and a cross-head formed on one of its ends, with two spindles extending from the said cross-head, one of said spindles being free and placed forward of the axis of the rake-head relatively to the motion of the chain, and the other being swiveled to the chain, a guideway formed on the inside of the side-boards and above the back of the ele-

vator, said spindles traveling on the guideways, substantially as and for the purpose specified.

4. In a harvester, a series of rake-heads connected together at each end by an endless chain or band carried by sprocket-wheels located at the top and bottom, above the back of the elevator, in combination with a curved guide or shield extending across the elevator and underlying the lower sprocket-wheel, and a plate extending across the grain-table at the base of the elevator, in front of said shield, substantially as and for the purpose described.

5. In a harvester, the combination of the sprocket-wheels and endless chains, the rake-heads carrying teeth and having cross-heads at one end formed with spindles, one of said spindles being swiveled in the chain and the other free, said cross-head being formed with a tail on the side adjacent to the swiveled spindle, a lug or block against which said tail

is adapted to contact to throw the free spindle forward, the guideways for said spindle, and the curved guide for guiding the spindles around the lower sprocket-wheels, substantially as described.

6. In a harvester, the combination of the endless chains and rake-heads having cross-heads at one end formed with spindles, one of said spindles being swiveled in the chain and the other free, the cross-heads being formed with a tail on the side adjacent to the swiveled spindle, with the lug or block adapted to be struck by said tail for throwing the free spindle forward, and the guideways for said spindles, substantially as described.

Tilsonburg, December 31, 1888.

FREDERICK D. MERCER.

JOHN S. MERCER.

In presence of—

J. CARRUTHERS,

E. A. ELLIS.