Sheet 1. 2. Sheets.

L and J Miller.
Mower.

No 37,049 Patented Dec. 2. 1862

Fig. 3.

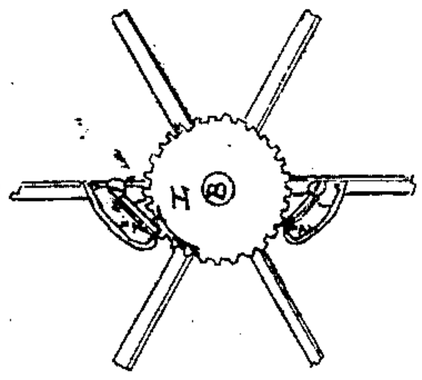
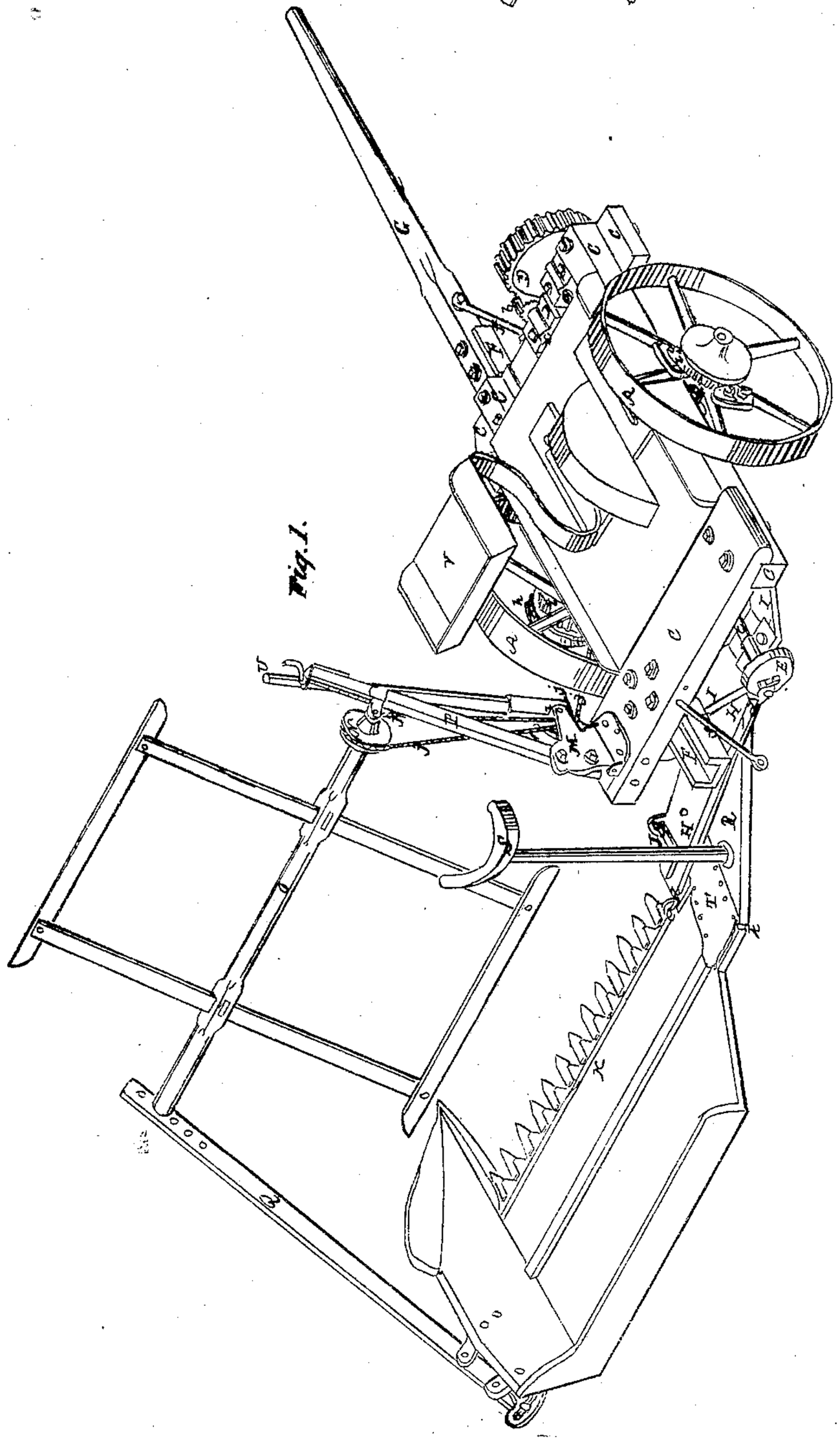


Fig. 1.



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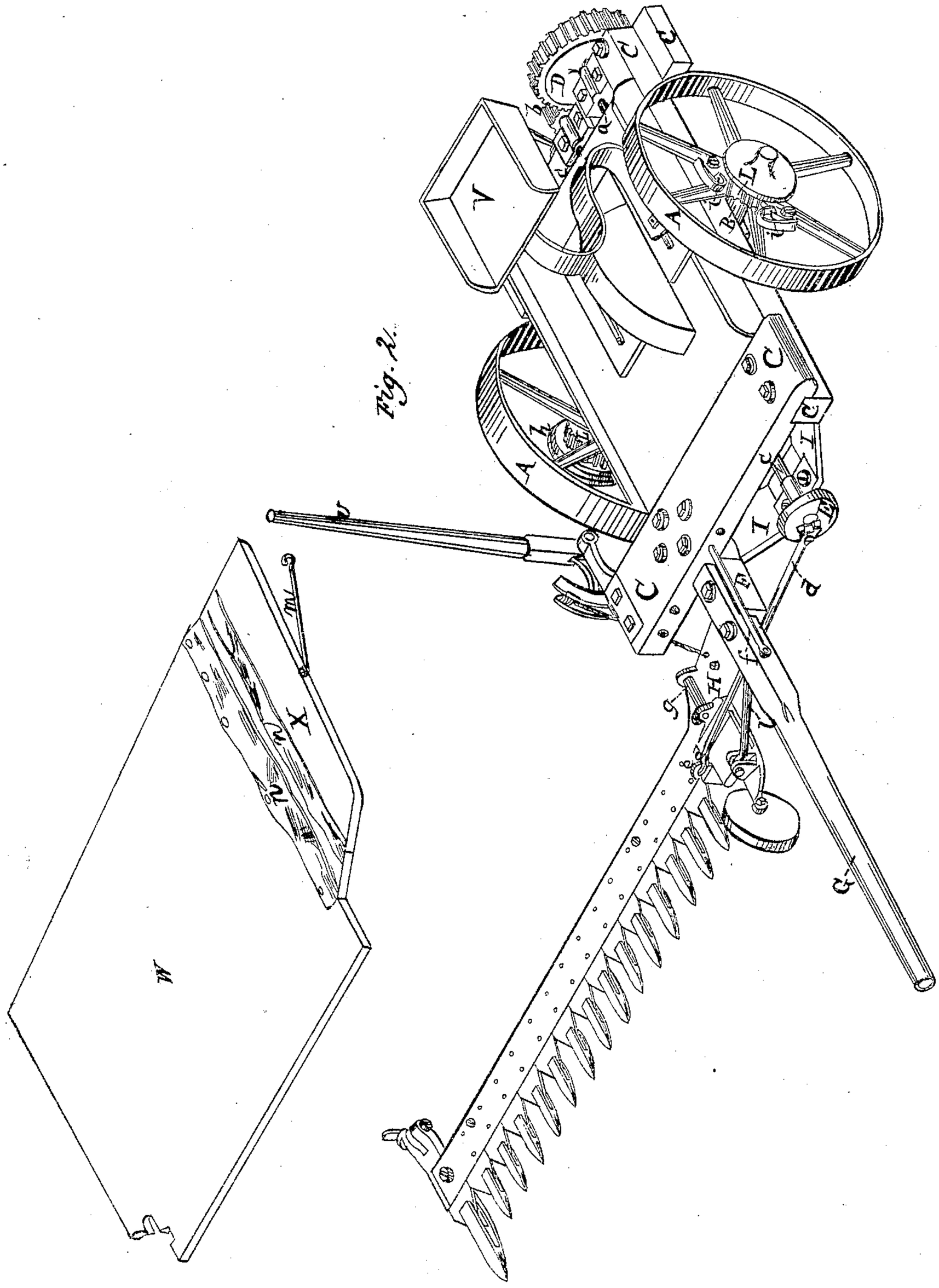
No 37,049

Patented Dec. 2. 1862

Fig. 2.



UNITED STATES PATENT OFFICE.

LEWIS MILLER AND JACOB MILLER, OF CANTON, OHIO.

IMPROVEMENT IN HARVESTING-MACHINES.

Specification forming part of Letters Patent No. **37,049**, dated December 2, 1862.

To all whom it may concern:

Be it known that we, LEWIS MILLER and JACOB MILLER, of Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Harvesting-Machines; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a perspective view of the machine as arranged for cutting grain. Fig. 2 represents a perspective view of the same machine arranged for cutting grass. Fig. 3 represents a view of one set of spring-pawls and a ratchet-wheel with which they can work.

Similar letters of reference, where they occur in the separate figures, denote like parts of the machine in all of them.

The first part of our invention consists in the use of double pawls, in combination with each ratchet-wheel, so that one shall hold and the other slip, whichever end of the main frame goes foremost, or when the machine is converted from a reaper to a mower.

Our invention further consists in placing a raker's stand or seat on the coupling-bar of a hinged-platform machine, so that his (the raker's) position with regard to the platform as it rises and falls shall not be changed, as he rises and falls with it.

Our invention further consists in using, in connection with a hinged finger-bar or hinged platform, a hinged fence on said platform, so that the finger-bar, with the platform attached to it, may be folded up to or against the main frame, to be carried by said main frame.

To enable others skilled in the art to make and use our invention, we will proceed to describe the same with reference to the drawings.

A A represent a pair of driving and supporting wheels upon a common axle, B, to which the main frame C is attached.

On the axle B there is a bevel cog-wheel that gears into a bevel-pinion on the end of the shaft *a* and gives motion to this shaft. The outer end of the shaft *a* has upon it a cog-wheel, D, that gears with a pinion, *b*, on the end of the shaft *c* and gives motion to this shaft. Upon the opposite end of the shaft *c* is a crank-wheel, E, to a wrist-pin, in which one end of the pitman *d* is connected, the other end of said pitman being attached to the cutter-bar at *e* to vibrate said cutter-bar.

At both the front and rear of the main frame there is placed a shoe, socket, or other equivalent device, F, to receive and hold the heel of the tongue G; and an adjusting-brace, *f*, is also provided, by which the point of the tongue may be put in the line of draft, should it become warped or bent, said brace extending obliquely from the main frame to the tongue, and furnished with jam-nuts.

The coupling-bar H is hinged to the bracket or down-hanger I to connect it to the main frame, its other end being hinged at *g* to an intermediate shoe, J, to which the finger-bar K is fastened. There is also a brace-bar extending from the opposite end of the main frame to the hinged coupling-bar to strengthen it.

Upon each end of the axle B there are ratchet-wheels L, varying from ordinary ratchet-wheels in this, that the teeth or cogs are radial, each side of each tooth being alike, and cut perpendicular to the face of the tooth, and these ratchet-wheels differ from an ordinary gear-wheel in this, that there need be no pitch to the teeth, the sides and face of each tooth meeting in a square corner, or nearly so; or their peculiarity may be explained in this way—viz., instead of beveling the teeth from their heels toward their points, they are left square, and, if anything, inclined in a contrary direction, so as to leave square or acute angles at the corners, instead of rounded corners.

On each wheel, diametrically opposite to each other, are placed two spring-pawls, *i i'*, pointing toward each other, so that when the wheel turns in the direction of the red arrow, Fig. 3, the spring-pawl *i* will hold the wheel and axle together, causing them to turn together, and should the wheel, as in backing or turning around, be required to turn independent of the axle, this pawl *i* would slip over the teeth of the ratchet and allow it to do so. When, in changing the machine from a reaper to a mower, the action of the wheels A with regard to the axle is to be reversed, the pawl *i* is thrown out and held out by its spring, and the pawl *i'* is thrown into action with the ratchet. The wheels then will turn with the axle when

moving in a direction contrary to that shown by the red arrow, Fig. 3, and turn independent of the axle when the machine is backed or turned around. Thus one ratchet and two pawls to each wheel allow the main frame to advance either end foremost, and the wheels have the necessary fast and slip motion to drive the cutter-bar when going forward, and disconnect the wheels from the axle when backing or turning around. The ratchet-wheel on that end of the axle next to the platform may have upon it a pulley, *h*, around which and around two loose pulleys, 1 2, on a hinged plate, M, passes an endless belt, *j*, and thence around a pulley, N, on the reel-shaft O, for the purpose of driving the reel. The reel-post P is bolted to the hinged plate M on the main frame, and the other reel-post, Q, is bolted to the outside shoe, divider, or grain end of the platform, and thus the platform, finger, and cutter-bar may play upon its hinged connection with the main frame without throwing off or slackening the belt that drives the reel. The reel-posts are made adjustable at their heels to throw them more toward or from the grain, and the reel-shaft can be adjusted in its bearings on or in the reel-posts to raise or lower it, as may be required.

To the coupling-bar H is bolted a projecting piece, R, on which is placed the raker's stand S, and as this coupling-bar, when the machine is used for reaping grain, rises and falls with the platform, the raker always maintains the same relative position with the platform which he would not do if riding on the main frame. This position, too, is better than one on the platform, because being more in the line of the draft, the side draft, which his weight out on the platform would produce, is avoided. The rear corner of the piece R may be hinged at *k* to the platform, and the joint or space between said piece and the platform may be covered by canvas or leather, T, or any other flexible or yielding material that will not destroy the joint between them. This flexible covering not only prevents straw, &c., from working into the joint, but is also a protection to the raker. U is a lifting-lever, by which the driver, in his seat V, may raise or lower the cutting apparatus at pleasure.

In Fig. 1 the machine is shown as arranged for cutting and raking off grain. It will be perceived that the cutting apparatus is in a line drawn through or near the rear of the main frame, and that the tongue is on the grain side of the main frame.

In Fig. 2 the machine is shown in the same position as it is shown in Fig. 1, but converted from a grain to a grass cutting machine. To make this change in the machine, the platform, cutting apparatus, reel, raker's stand, and its support are removed, and a finger-bar and cutting apparatus, as shown in Fig. 2, are attached to the coupling-bar and pitman, with an additional brace, *l*, if found essential. The tongue G is taken to the other end of the main frame and united, as shown in said Fig. 2, the driver's seat turned around, and the machine is adapted to mowing grass, the cutters now being in a line drawn through or near the front of the main frame. The spring-pawls that were used in the machine as a reaper (or as in Fig. 1) are thrown out and the other pair are thrown into action with the ratchets, which reverses the fast and loose motions of the wheels upon the axle; and as a narrower swath is desirable in cutting grass, the finger-bar and cutters for that purpose may be shorter than those in Fig. 1 for cutting grain.

To the left of Fig. 2 we have shown a platform, W, which may be attached to the finger-bar there shown. To the main-frame side of this platform there is attached, by strong canvas or leather, a fence or side board, X, against which the material that is being cut may be raked previous to shoving it off the platform. The object of this flexible connection between the fence or side board, X, and the platform is to allow the finger-bar and platform to turn up together against and be supported by the main frame, while at the same time it serves as a fence against which the material may be raked into a compact bundle previous to sweeping it off onto the ground. A rod or hook, *m*, may be used to fasten this side piece to the main frame. That the platform may come up to and rest against the main frame, two hinges, *n n*, are necessary in the fence or side board X.

Having thus fully described the nature and object of our invention, what we claim is—

1. In combination with a reversible main frame and cutting apparatus, the double pawls and ratchets for connecting and disconnecting the driving-wheels and axle, so that the necessary fast and loose motions of the wheels upon their axles may be had, whichever end of the main frame goes foremost, substantially as descried.

2. In combination with a hinged platform or cutting apparatus, the locating of the raker's position on the coupling-bar which connects said platform or cutting apparatus with the main frame, substantially as described.

3. In combination with a hinged platform, finger-bar, and cutting apparatus, a double-hinged side or fence on said platform, so that the finger-bar, cutters, and platform attached to them may be folded up to or against the main frame, so as to be carried by the main frame, substantially as described.

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