3 Sheets—Sheet 1.

J. H. LEWIS.

Harvester-Rake.

No. 203,630. Patented May 14, 1878.

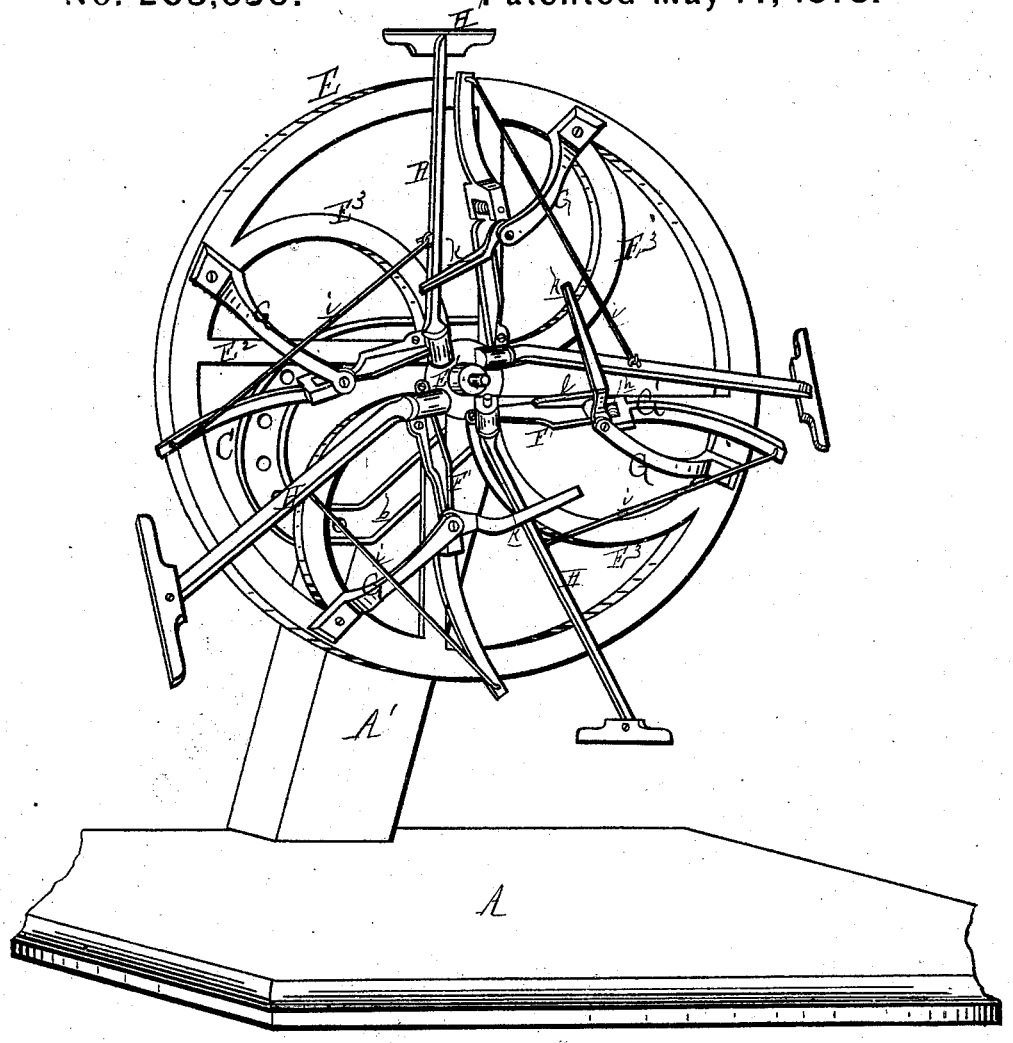


Fig. 1.

Witnesses:
H. L. Aulls:
Charles J. Hunt.

Inventor:
J. H. Lewis
By Otis
Thos. S. Sprague

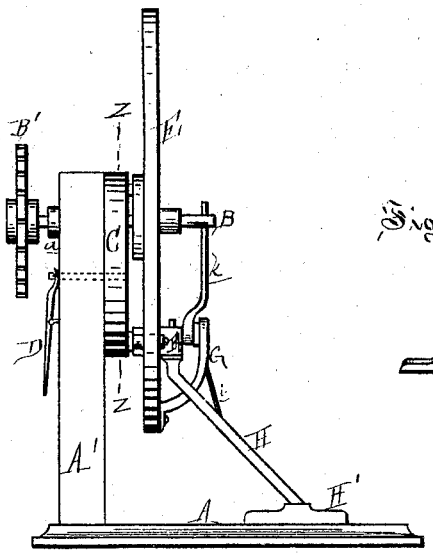
3 Sheets—Sheet 2.

J. H. LEWIS.

Harvester-Rake.

No. 203,630. Patented May 14, 1878.

Fig. 2.



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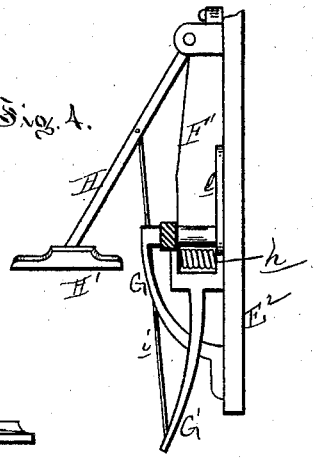
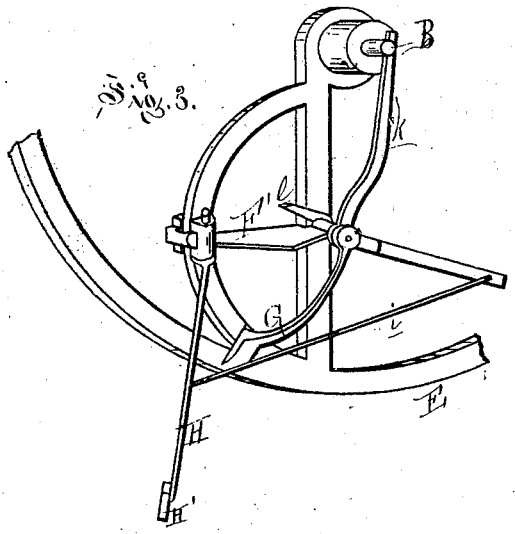


Fig. 3.



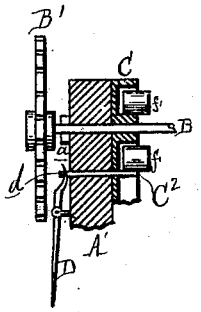


Fig. 5

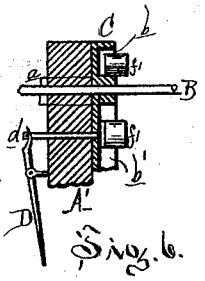


Fig. 6.

Witnesses:
H. L. Wells.
Chas. J. Hunt

Inventor:
J. H. Lewis
By Atty
Wm. S. Sprague

J. H. LEWIS.

Harvester-Rake.

No. 203,630. Patented May 14, 1878.

Fig. 7.

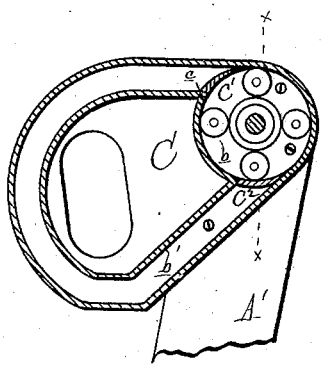


Fig. 8.

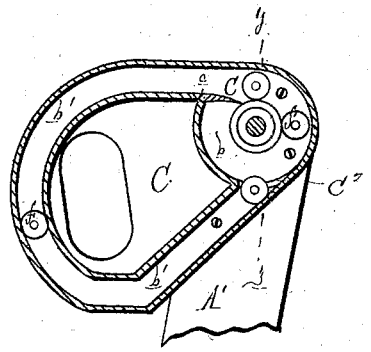


Fig. 9.

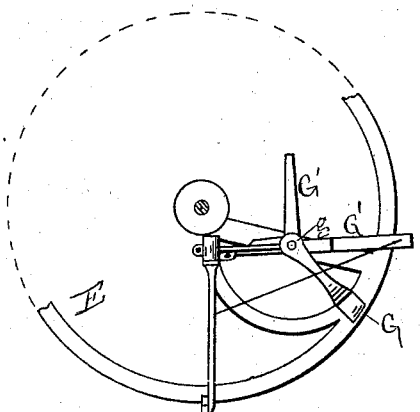


Fig. 10.

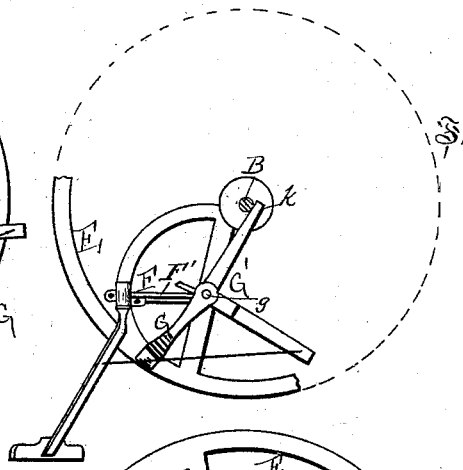


Fig. 11.

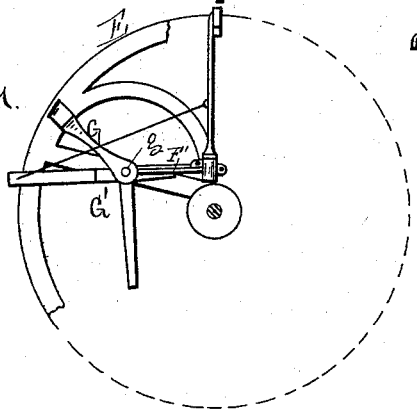
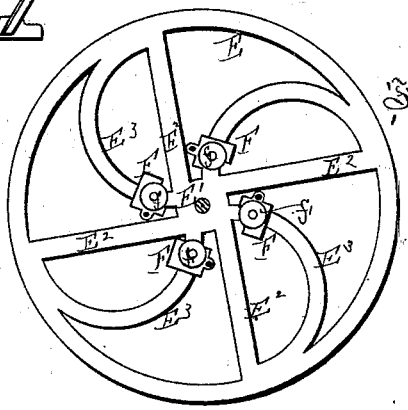


Fig. 12.



Witnesses:
H. L. Aulls
Chas. J. Hewett.

Inventor:
J. H. Lewis
By Atty
Thos. S. Sprague

UNITED STATES PATENT OFFICE.

JAMES H. LEWIS, OF DETROIT, MICHIGAN.

IMPROVEMENT IN HARVESTER-RAKES.

Specification forming part of Letters Patent No. **203,630**, dated May 14, 1878; application filed April 13, 1878.

To all whom it may concern:

Be it known that I, JAMES H. LEWIS, of Detroit, in the county of Wayne and State of Michigan, have invented an Improvement in Combined Revolving Rake and Reel for Reaping-Machines, of which the following is a specification:

The nature of this invention relates to certain new and useful improvements in the construction of combined rakes and reels to be attached to reaping-machines, by means of which, after a sufficient amount of grain has been cut to form a sheaf, and is lying on the rake-table, the same can be raked to the rear thereof and deposited on the ground, ready for binding, at the will of the operator.

The invention consists, first, in the combination of curved arms on the reel-head, projecting outwardly from the center of the same, with heads sliding upon such arms, and carrying the reel-arms, and a cam-plate on the standard having a groove of such construction that the reel-arms can be operated to perform the functions of a reel or a rake, or both, as desired; second, in the peculiar construction of the cam-plate, provided with a pivoted guide-plate and a sliding guide-plate retracted by a lever, for controlling the movements of the reel-arms; and, further, in the combination of the parts for causing the reel-arms to be presented to the rake-table parallel to the cutter-bar, and retaining it in such position until compelled to make the rake or sweeping movement, all as fully hereinafter explained.

Figure 1 is a perspective view of my improved combined rake and reel. Fig. 2 is a side elevation of the same. Fig. 3 is a detached perspective of one of the rake-arms and its attachments. Fig. 4 is a side elevation of parts shown in Fig. 3. Fig. 5 is a section on the line *x x* in Fig. 7. Fig. 6 is a section on the line *y y* in Fig. 8. Fig. 7 is a section on the line *z z* in Fig. 2. Fig. 8 is a similar view, but showing the position of adjustable segments to compel the rake movement of the arms. Fig. 9 is a front elevation of one rake or reel arm with its attachments and segment of the reel-head, showing position of parts while performing the functions of a reel. Fig. 10 is a similar view, showing position of parts to perform functions of a rake. Fig. 11 is a similar view, showing position of parts, as at the completion of the rake-stroke. Fig. 12 is a rear elevation of the reel-head, with the rake-arms and their attachments removed.

In the accompanying drawings, A represents the rake-table of a reaping-machine, from which rises the standard A′, its position being varied according to the style of reaper to which my device is to be attached. In the head of this standard A′ is placed a bearing, *a*, for the shaft B, which carries on its rear end a chain-wheel, B′, or other suitable devices, by means of which a rotating motion can be imparted to the shaft and its connections, hereinafter named.

C is a cam-plate, secured to the face of the standard A′, and has formed in its face the circular channel *b* and the cam-channel *b′*. At the point of juncture between these channels, at the top of the cam-plate, is pivoted, at *c*, an adjusting segmental guide, C^1, while at the bottom of the circular channel *b*, and at the point of its juncture with the cam-channel *b′*, and to complete the circular channel, I place an adjustable segmental plate, C^2, which has a rearwardly-projecting arm or rod, *d*, which passes through the standard A′, its rear end being secured to one end of the lever D, which is pivoted to the rear side of the standard A′, as shown. A spring should be adjusted about the arm of the segmental plate C^2, or upon the lever D, to compel said plate C^2 to remain in the extended position shown in Figs. 5 and 7, completing the circular channel *b* at that point.

Rigidly secured to the shaft B, in front of the cam-channel plate, is a reel-head, E, from the hub E^1 of which extend the radial arms E^2 and the quadrant-arms E^3. On the quadrant-arms E^3, I place sliding boxes F, to the rear faces of which I pivot friction-rollers *f*, which travel in the channels in the cam-plate, as hereinbefore described. These sliding boxes have rigidly secured to them arms F′, the outer ends of which are pivoted to the bolts *g*, which pass through the radial arms E^2 and into the ends of the brackets G, which are secured to the reel-head, as shown; also, pivoted upon these bolts *g* are the forked bell-crank levers G′, in the forks of which are secured suitable springs *h*, for the purpose of keeping the bell-

cranks and rake-arms in their proper relative positions, as, were it not for these springs, the arms and bell-cranks would fall over in the rotation of the device. A forwardly-projecting stud or arm, *l*, in each of the bell-cranks prevents the arms from moving back upon meeting any resistance from the grain upon which it is operating. One of the arms of these bell-cranks is connected, by means of rods *i*, with the rake or reel arms H, one end of each of which is pivoted in the sliding boxes F, while to the opposite ends are secured the rake-heads H′, as in the usual manner.

The operation of this device is as follows: When it is desired to use this attachment as a reel only, the parts retain their several positions, as is shown in Fig. 1, rotating in a circle, the friction-wheels *f* traveling in the circular channel *b* of the cam-plate, the rake-heads compelling the grain, as cut, to lie upon the table A. When a sufficient amount of grain has been cut to make a gavel, and it is desired to rake the same therefrom, the operator, by means of the lever D, withdraws the segmental plate C^2, thus opening communication between the two channels of the cam-plate. As, in the rotation of the device, one of the friction-wheels *f* comes to this opening, it runs into the channel *b′*, following its course. This causes its sliding block F to slide down upon the quadrant-arm E^3, carrying with it its respective rake-arm, and causes the bell-crank lever G′ to partially rotate upon its pivot until the arm *k* thereof comes in contact with the projecting end of the shaft B. At this point the rod *i* compels the reel-arm H to partially rotate in the sliding box, and assume the position shown in Fig. 10. The bell-crank is held in contact with the shaft until the rake-arm H is caused to assume a nearly horizontal position by means of the roller *f* traveling in the channel *b′*, and as the parts travel back toward the center, the arm H draws upon the rod *i* and compels the bell-crank to assume its original position.

I have shown in my drawings and described in my specification the employment of a bell-crank lever for producing or compelling certain actions on the part of the reel-arms; but I do not wish to confine myself thereto, as it is obvious that the same results may be produced by the employment of a single arm or lever at that point, the end of which shall come in contact with a suitable stop, either on the reel-head or standard, at the proper point to produce the desired action of parts.

What I claim as my invention is—

1. In a combined rake and reel attachment for reapers, the combination, with the reel-head E, having curved arms projecting outwardly from its center, of the heads F, sliding on such arms, and carrying the reel-arms, and the cam-groove on the standard, substantially as and for the purpose set forth.

2. The cam-plate C, for the purpose set forth, having circular groove *b*, cam-groove *b′*, pivoted plate C^1, and sliding plate C^2, moved by a lever, substantially as described and shown.

3. In a combined rake and reel attachment for reapers, the reel-arm H, sliding from the center of the reel-head in performing the functions of a rake, substantially as described, in combination with the arm F′, lever G′, rod *i*, and spring *h*, for the purpose of causing said arm H to be presented to the rake-table parallel to the cutter-bar, and retaining it in such position until compelled to make the rake or sweeping movement, substantially as set forth and shown.

JAMES H. LEWIS.

Witnesses:
H. S. SPRAGUE,
CHAS. J. HUNT.