S. D. LOCKE.
Grain-Binder.

No. 218,447. Patented Aug. 12, 1879.

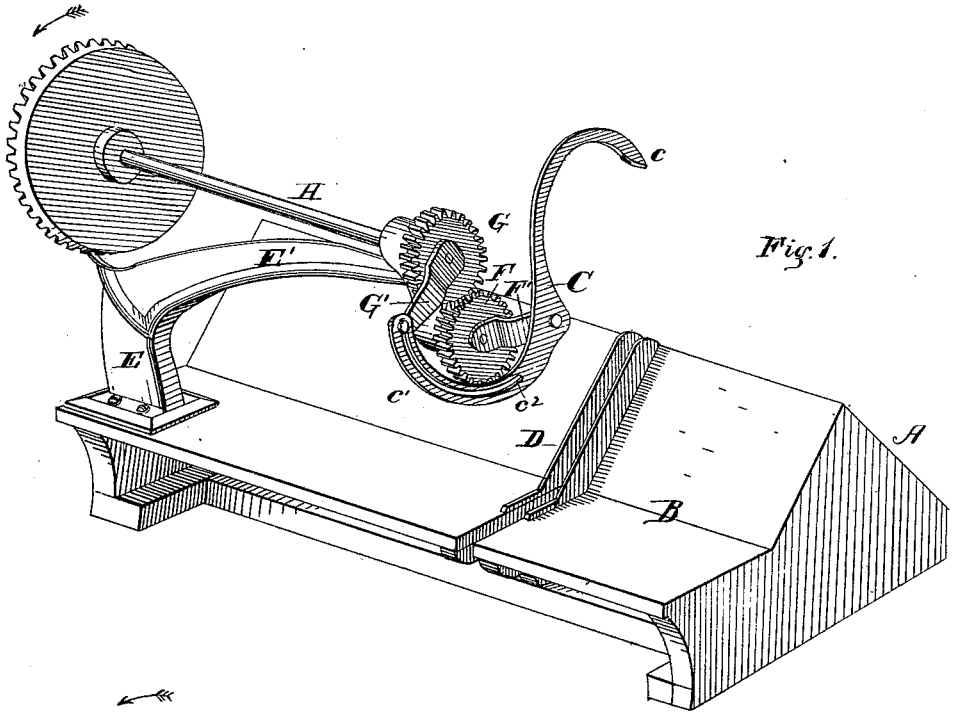

Fig. 1.

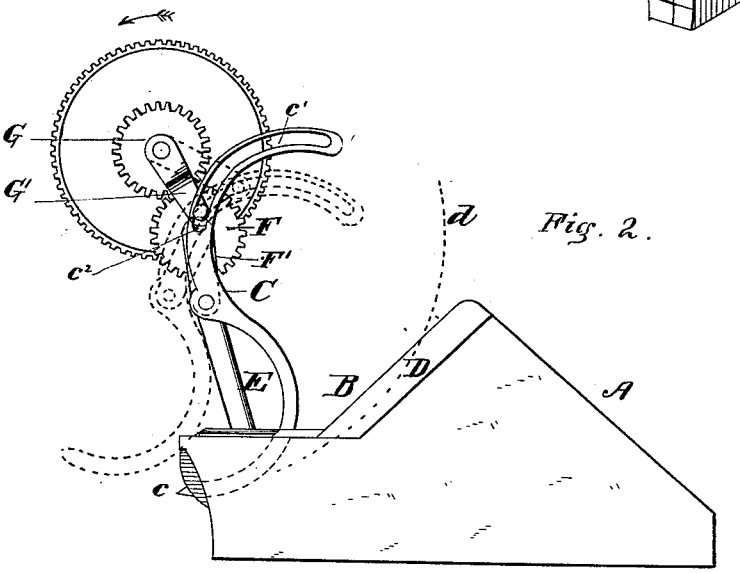

Fig. 2.

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UNITED STATES PATENT OFFICE.

SYLVANUS D. LOCKE, OF HOOSICK FALLS, NEW YORK.

IMPROVEMENT IN GRAIN-BINDERS.

Specification forming part of Letters Patent No. **218,447**, dated August 12, 1879; application filed February 6, 1879.

To all whom it may concern:

Be it known that I, SYLVANUS D. LOCKE, of Hoosick Falls, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Grain-Binders; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view, showing the position of the point of the binding-arm or carrier at the beginning of its descent into the grain. Fig. 2 is a side elevation, partly in section, showing the position of the binder-arm while the band is being secured, and also showing, in dotted lines, its position after the gavel has been thrown off the machine.

Similar letters of reference in the several figures denote the same parts.

This invention relates to that class of machines known as "automatic grain-binders;" and has for its object to improve the construction and operation of the binding-arm or carrier, which separates or divides the grain into gavels as its comes from the elevator, and passes the binding material around said gavels prior to their discharge from the machine.

To this end the invention consists of a band-carrying arm supported at two different points in its length by devices to which independent orbital motions in opposite directions are imparted to guide and control the arm.

It also consists in mounting the band carrying or separating arm upon a rotating crank, and imparting to said arm a vibratory motion by means of a second crank rotated in an opposite direction.

It also consists in the employment of a slotted band carrying or separating arm in connection with oppositely-rotated cranks.

It consists, lastly, in a general combination of parts which I will now proceed to describe.

In the accompanying drawings I have shown a portion of the frame of an automatic binding-harvester in order that the application of my improvements may be more readily understood, A representing the elevator by which the grain is brought from the cutting apparatus; B, the receptacle into which the grain is delivered by the elevator for the purpose of being bound into bundles; C, the binding-arm or band-carrier, and D ledges to guide and shield the binding-arm in its movements. The binding-arm and its operating mechanism are supported upon a standard or bracket, E, secured to the machine at one end of the binding-receptacle, the binding-arm itself being arranged at the extremity of the standard, so as to properly divide the grain as it is delivered from the elevator and apply the bands at or near the middle of the bundles.

F is a gear-wheel mounted upon a stud on the extremity of the arm E′ of said standard E. This wheel carries a crank, F′, to which the binding-arm C is pivoted at or near its middle.

The binding-arm itself is preferably of ogee form, its outer end, *c*, being pointed, to adapt it to pass readily through the grain, and its inner end slotted at c^1, to accommodate the wrist of a crank, G′, carried by a gear-wheel, G, which meshes with the wheel F, as shown.

The gear-wheel G is secured to a shaft, H, which has its bearings in the standard E, and is suitably geared to the driving mechanism of the machine.

To vary the movement of the arm as may be desired, either of the gear-wheels F G may be mounted on the driving-shaft, or any intermediate gear may be used.

The operation of the machine is as follows: Let it be supposed that the machine is at work, and a continuous stream of grain is being delivered by the elevator into the binding-receptacle, and that the binding-arm is in the position shown in Fig. 1. The shaft H, being thrown into gear and rotated in the direction indicated by the arrow, will cause the crank F′ to lower the pivot of the binding-arm, while the wrist of the crank G′, traversing the slot c^1, will impart to said arm an oscillatory movement on the crank F′, and cause the point *c* to describe the curve represented at *d* in Fig. 2. The point, it will be observed, enters the grain obliquely, and carries the divided portion or gavel downward and compresses it properly, at the same time carrying around it the securing-band. When the arm reaches the position shown by full lines in Fig. 2, or, in other words, when the two cranks F′ G′ are nearly in line, and the wrist of the crank G′ is at the extremity c^2 of the slot c^1, the driving-shaft H halts mo-

mentarily to allow the mechanism below the binding-receptacle to fasten and secure the band and sever it from the body of the binding material, in the usual manner. This momentary halt of the driving-shaft H may be effected by means of a broken gear-wheel, or some other equivalent arrangement that will at once suggest itself to the mind of a skilled machinist. Continuing its movement from the point of momentary rest, the binding-arm sweeps forward out of the slot in the binding-table to the position shown in dotted lines, Fig. 2, carrying with it the bound bundle and ejecting the same from the machine. The further movement of the crank causes the binding-arm to rise nearly vertically until they cranks again come in line, after which, as they pass each other, the point c^1 is thrown up into position for another descent into the grain to form the next succeeding bundle.

The operation, it will be observed, is thus very easy and rapid, and the division or separation of the stream of grain into gavels accomplished in a most satisfactory manner.

I wish it clearly understood that the arrangement of parts which I have above particularly described is but one embodiment out of many that could be enumerated of the principle covered by my invention. The number of gears employed, the shape and configuration of the binding-arm and its slot, and the relative arrangement of the various parts with respect to the binding-table may, of course, be varied as circumstances may require without at all departing from the spirit of my invention.

I have not deemed it necessary to represent or describe herein any particular mechanism for securing the bands prior to the discharge of bundles from the machine, as any of the known forms may be successfully employed, care, of course, being taken that all the parts are so timed as to work in harmony.

I claim as my invention—

1. In a grain-binder, a band carrying or separating arm supported at two different points in its length by devices to which independent orbital motions in opposite directions are imparted to guide and control the arm.

2. In a grain-binder, a band carrying or separating arm mounted upon a rotating crank, and vibrated on said crank by a second crank rotating in an opposite direction, substantially as described.

3. In a grain-binder, the combination of the oppositely-rotated cranks with the slotted band carrying or separating arm, substantially as described.

4. In a grain-binder, the combination of the gear-wheels, the cranks mounted thereon, and the slotted band carrying or separating arm, substantially as described.

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Witnesses:
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