H. S. L. BRYAN.

Improvement in Grain-Binders.

No. 132,436. Patented Oct. 22, 1872.

*Fig. 1.*

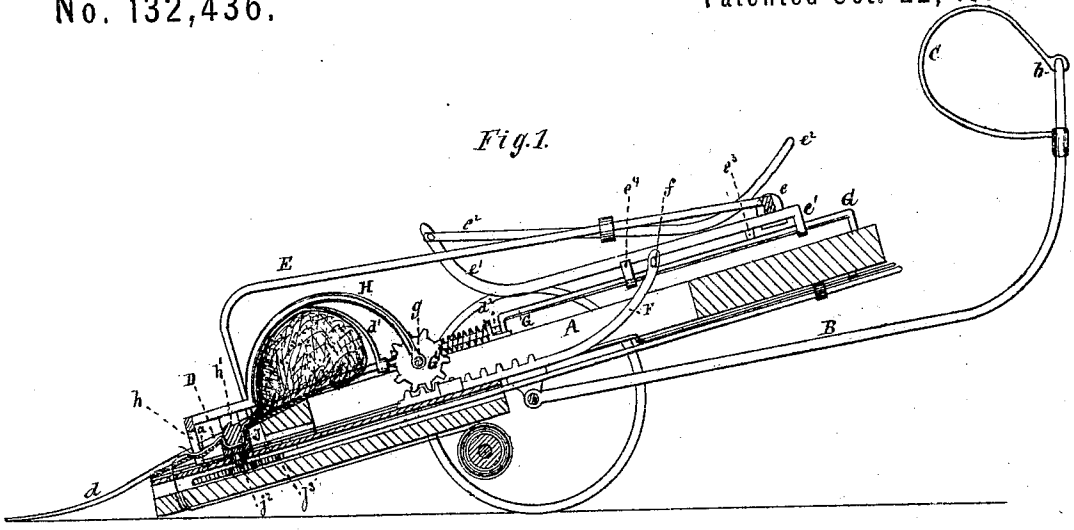


*Fig. 2.*

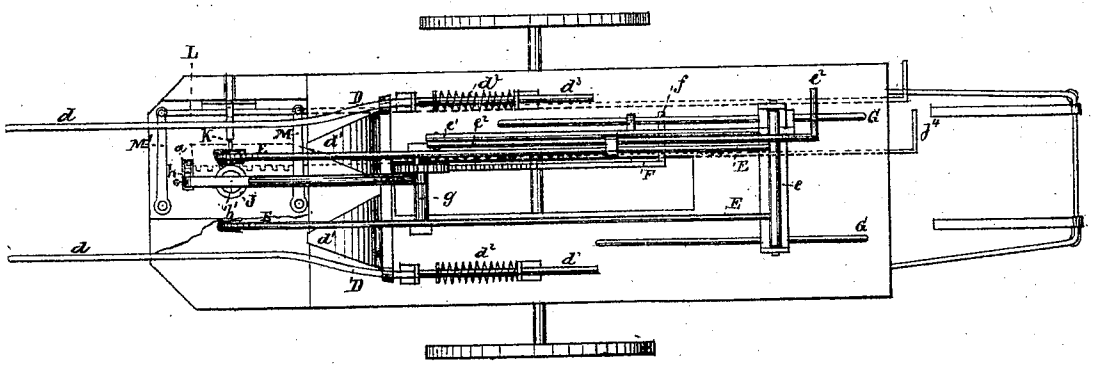


*Fig. 3.*

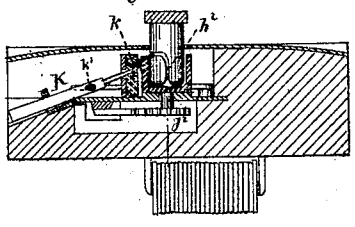


*Fig. 4.*

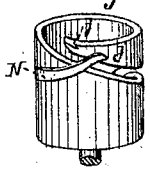


*Fig. 5.*

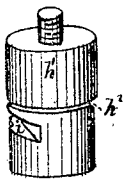
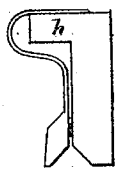


*Fig. 6.*



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# UNITED STATES PATENT OFFICE.

HUGH S. L. BRYAN, OF KEARNEY, MISSOURI.

## IMPROVEMENT IN GRAIN-BINDERS.

Specification forming part of Letters Patent No. **132,436**, dated October 22, 1872.

*To all whom it may concern:*

Be it known that I, HUGH S. L. BRYAN, of Kearney, in the county of Clay and State of Missouri, have invented an Improved Grain-Binder, of which the following is a specification:

The invention relates to a binder, which may be used in connection with a reaper, or independently, and will first be fully described in connection with all that is necessary to a full understanding thereof, and then clearly pointed out in the claim.

Figure 1 is a vertical longitudinal section; Fig. 2, a top view; Fig. 3, a cross-section of the front part; Figs. 4, 5, and 6 are detail views, respectively, of cylinder J, presser $h^1$, and spring-finger $h$.

A is the platform pivoted on axle and mounted on wheels, and B are arms pivoted to axle, curved rearwardly, and extending up to a point, $b$. Here they are attached to the shoulders by straps C, which pass around the arm and near the shoulder. D is the fork, which receives the gavel, and is provided with prongs $d$ $d$, bifurcated stop $d^1$, and springs $d^2$ $d^2$ on its shanks $d^3$ $d^3$. E is the rake, pivoted at the rear to a sliding frame, $e$, which also carries the bar $e^1$ and hand-lever $e^2$. F is a rack-bar having the projection $f$, which is moved between bar $e^1$ and the rails G G. The studs $e^3$ $e^4$, on said bar $e^1$, act against this projection $f$ and move the rack-bar backward and forward. G′ is a spur-wheel, which is rotated by rack F on the rigidly-attached shaft $g$, to which is also rigidly attached a twine-carrier, H. This carrier has a spring-finger, $h$, which passes through the aperture $a$ of platform A, and astride of the twine, and a presser, $h^1$, which passes down into a cylinder, J. The presser $h^1$ has a groove, $h^2$, on the bottom, which continues upon each side, and turns to the rear. The cylinder J has an arm, $j$, hook $j^1$, and pinion $j^2$, and is operated by a rack-bar, $j^3$, which has a handle, $j^4$, extending to the rear. K is a needle, set in bearings, and provided with rubber piece $k$. L is a rod, pivoted to arms M M′, and passes through the eye $k^1$ of the needle. N is a knife or twine-cutter. This needle has a backwardly-inclined barb near its end to catch twine, and a large square shank, which is perforated to receive the rod that moves it.

The mode of operation is as follows: The fork D having received the gavel, the rake E is passed over it, and the gavel is drawn up on the fork against the bifurcated stop $d^1$, where it is tightly held, the fork itself being forced back against the springs $d^2$ to admit the uneven portions of the gavel. The operator now causes the twine-carrier to come down, so that the spring-finger $h$ straddles the twine, while the presser $h^1$ passes into cylinder J. This winds the twine once about the gavel. The cylinder J is now rotated, and with its hook $j^1$ carries the twine around the presser $h^1$ in groove $h^2$. The needle K is now caused to pass up through cylinder above hook $j^1$ and through rear part of groove $i$. By this operation the twine is thrown behind barb of needle, whose motion is now reversed, and then sunk tightly into the rubber $k$. The cylinder J is now reversed, and in its backward movement brings the twine against the knife N. The pressure of the rake on the gavel is now withdrawn, when it is expelled by the reaction of springs $d^2$ $d^2$.

Having thus described all that is necessary to a full understanding of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of fork D having bifurcated stop $d^1$ with the pivoted and sliding rake E, operating to receive, compress, and hold the bundle in the manner described.

2. I claim the two-pronged fork D, provided with stop $d^1$, in combination with springs $d^2$ $d^2$, which expel the gavel as soon as it is released.

3. The combination of pivoted twine-carrier H, having spring-finger $h$ and grooved presser $h^1$ $h^2$, with the rotary cylinder J having arm $j$ and hook $j^1$ to wrap the twine in the manner described.

4. The twine-carrier H $h$ $h^1$ $h^2$ and cylinder J $j$ $j^1$, combined with barbed needle K and rubber $k$, as and for the purpose described.

5. The combination of rake E, sliding frame $e$, and bar $e^1$ $e^3$ $e^4$, with rack-bar F having projection $f$, arranged as described, so as to operate the rake and twine-carrier simultaneously, as set forth.

6. The combination of the fork D $d^1$ to receive the gavel, and rake E to bring it into position for tying, with twine-carrier H $h$ $h^1$ $h^2$, wrapping-cylinder J $j$ $j^1$, barbed needle K, and twine-cutter, all operating together, as and for the purpose described.

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