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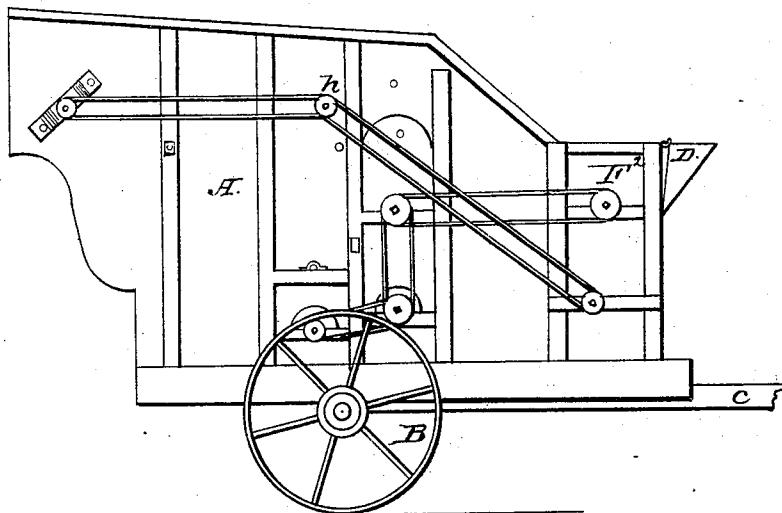
D. M. HEIKES.

## Clover Separator and Huller.

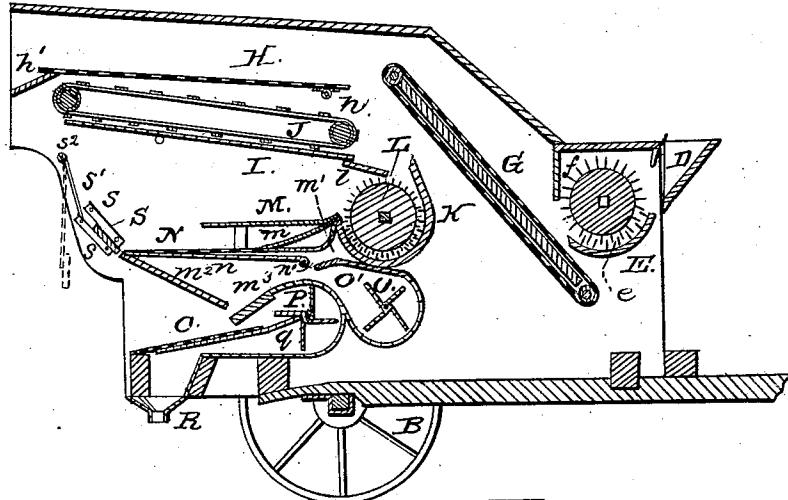
No. 77,731.

Patented May 12, 1868.

Fig. 1.



A. Fig. 2.



### witnesses

Jacob Henry  
Chas. D. Smith.

## *Inventor*

By D. W. Reitke,  
Hiedersheim & Co,  
Attorneys

2 Sheets—Sheet 2.

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Fig. 3.

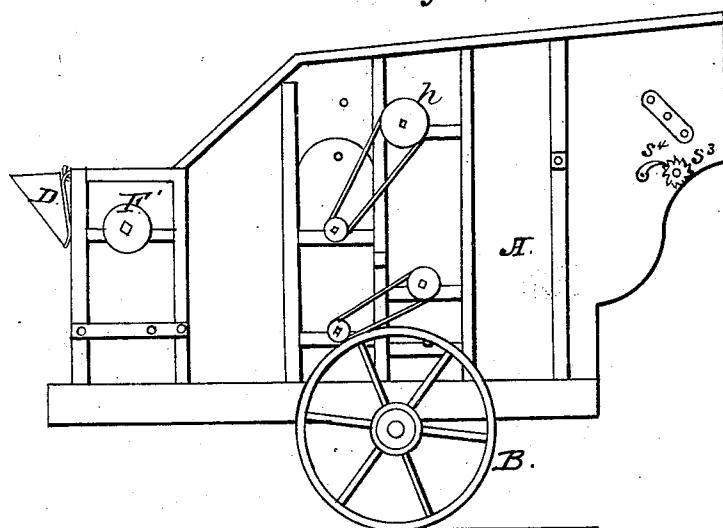


Fig. 4.

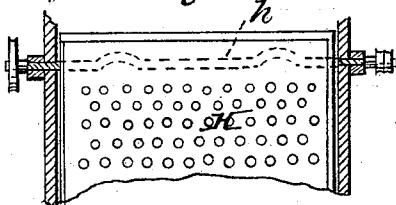


Fig. 7.

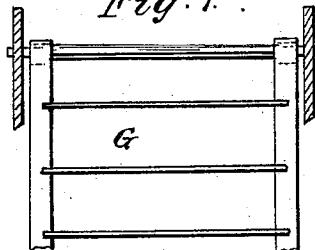


Fig. 5. M.

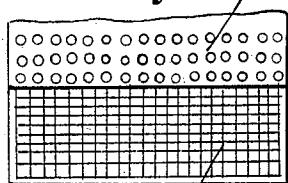
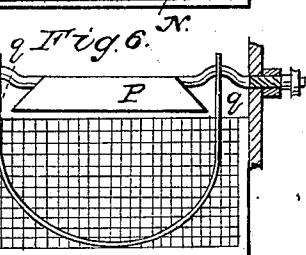
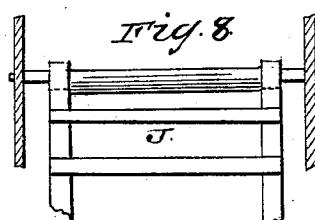


Fig. 8.



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# United States Patent Office.

DAVID M. HEIKES, OF FRANKLIN TOWNSHIP, PENNSYLVANIA.

*Letters Patent No. 77,781, dated May 12, 1868.*

## IMPROVED CLOVER-SEPARATOR AND HULLER.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, DAVID M. HEIKES, of Franklin township, in the county of York, and State of Pennsylvania, have invented a new and useful Clover-Separator and Huller; and I do hereby declare the following to be a full, clear, and exact description thereof, sufficient to enable others skilled in the art to which my invention appertains to fully understand and use the same, reference being had to the accompanying drawings, which are made part of this specification, and in which—

Figure 1 is a side elevation of a machine illustrating my invention.

Figure 2 is a longitudinal vertical section of the same.

Figure 3 is an elevation, showing the side opposite that seen in fig. 1.

Figures 4, 5, 6, 7 and 8, are detached views of parts hereinafter more particularly referred to.

Similar letters of reference indicate corresponding parts in the several figures.

The subject of this invention is a machine for hulling clover-seed, and separating the same from the hulls, stems, leaves, straw, grass, dust, and whatever other matter may be commingled therewith.

The invention consists in a novel combination and arrangement of parts, whereby to attain the desired result in an expeditious and perfect manner.

In the drawings, A is the main frame, enclosing and supporting the operating parts, and mounted upon wheels B B, and provided with a tongue, C, for the attachment of a team, so as to be easily conveyed from place to place. In operation the machine is suitably supported in an inclined position, in order that the several sieves and riddles hereinafter mentioned shall incline downward from their front ends, so as to discharge the refuse matter through the opening at the rear end of the machine.

The clover in hull, together with the stems, leaves, and other matter from which it is to be separated, is fed into the hopper D, whence it descends into a concave, E, which is provided with upward projecting teeth or prongs e, and which is concentric with the cylinder F, whose periphery is studded with similar teeth or prongs f. The cylinder F has upon one end a pulley, F<sup>1</sup>, (see fig. 3,) to which the power to drive the machine may be applied, and upon the other end said cylinder carries a pulley, F<sup>2</sup>, (see fig. 1,) from which motion may be transmitted to the several moving parts by bands and pulleys.

The conjoint action of the teeth e f is to detach the leaves and stems from the hulls which hold the seed, the separation of the latter from the hulls being effected by a subsequent operation. The rotation of cylinder F delivers the stuff to the endless apron or conveyer G, (see detailed view, fig. 7,) which deposits it upon the sieve or shaker H. This shaker is suitably attached by loops or otherwise to the bent or knee-shaped portions of the shaft h, so that, as said shaft rotates, the shaker H receives longitudinal reciprocating motion, the rear end of said shaker being free to move upon its support h', and the forward end of the shaker receives at the same time an up and down or vertical reciprocating motion. The perforations or meshes of the shaker H are large enough to permit the passage through them of the seed, with their enclosing-pods and other small particles, but the main portion of the refuse, including the larger particles, such as the stems, leaves, and straw, is on account of the motion and inclination of the shaker, carried to the rear end thereof, and discharged from the machine. That which falls through the shaker H is received on the board I, and conveyed upward upon the surface of the same by the slatted conveyer J, (see fig. 8,) which delivers the seed in the hull, together with other matter which may be mixed therewith at this stage of the operation, into the concave, K, concentrically within which is a rotating cylinder, L. The teeth k and l of the concave, K, and cylinder L, respectively, operate in such close proximity to each other that the seeds are detached and dislodged from the hulls. Thus a complete hulling of the seed is effected. The seed and detached hulls are worked out of the concave, K, by the rotation of the cylinder L, whence they pass on to the sieve M. The seed, or a portion thereof, passes through the sieve M, and thence on to the riddle N, through which it passes, while the hull, dust, and other light matter are blown out through the rear opening of the machine by the blast of the fan O. The sieve M and riddle N are shaken by rods n, attached to bent or crank-like portions of the shaft n'. The seed is prevented from falling into the fan-case O' by the deflector m m'.

The reversely-inclined boards  $m^2$   $m^3$ , conduct the seed on to a final riddle, Q, and in the passage of the seed to this riddle, a further separation of the dust and light matter is effected by the blast of a second fan, P, which blast carries off the dust, &c., at the rear of the machine, while the seed, in a nude and clean condition, passes through riddle Q and spout R, beneath which latter a suitable receptacle may be placed. The riddle Q is shaken by the rods q, which connect it with the shaft of pan P.

S is a movable deflecting-board, which may be held in any desired position in the guides s s, by means of the straps or cords s<sup>1</sup> and rod s<sup>2</sup>, the latter being provided with a detaining-ratchet, s<sup>3</sup>, and pawl s<sup>4</sup>, as shown in fig. 3, and said board S serves to regulate the blast of fan O upon the riddle N. The board S may be removed from the guides s when desired.

Having thus described my invention, the following is what I claim as new herein, and desire to secure by Letters Patent:

The combination of the breaking-device e f, elevator G, riddle H, conveyer J, platform or board I, hulling-device k l, sieves M N Q, fans O P, and delivering-spout R, all arranged substantially as described.

The above specification of my improvement in clover-separators signed, this fifth day of February, 1868.

DAVID M. HEIKES.

Witnesses:

ALEXR. A. C. KLAUCKE,

JACOB HENRY.