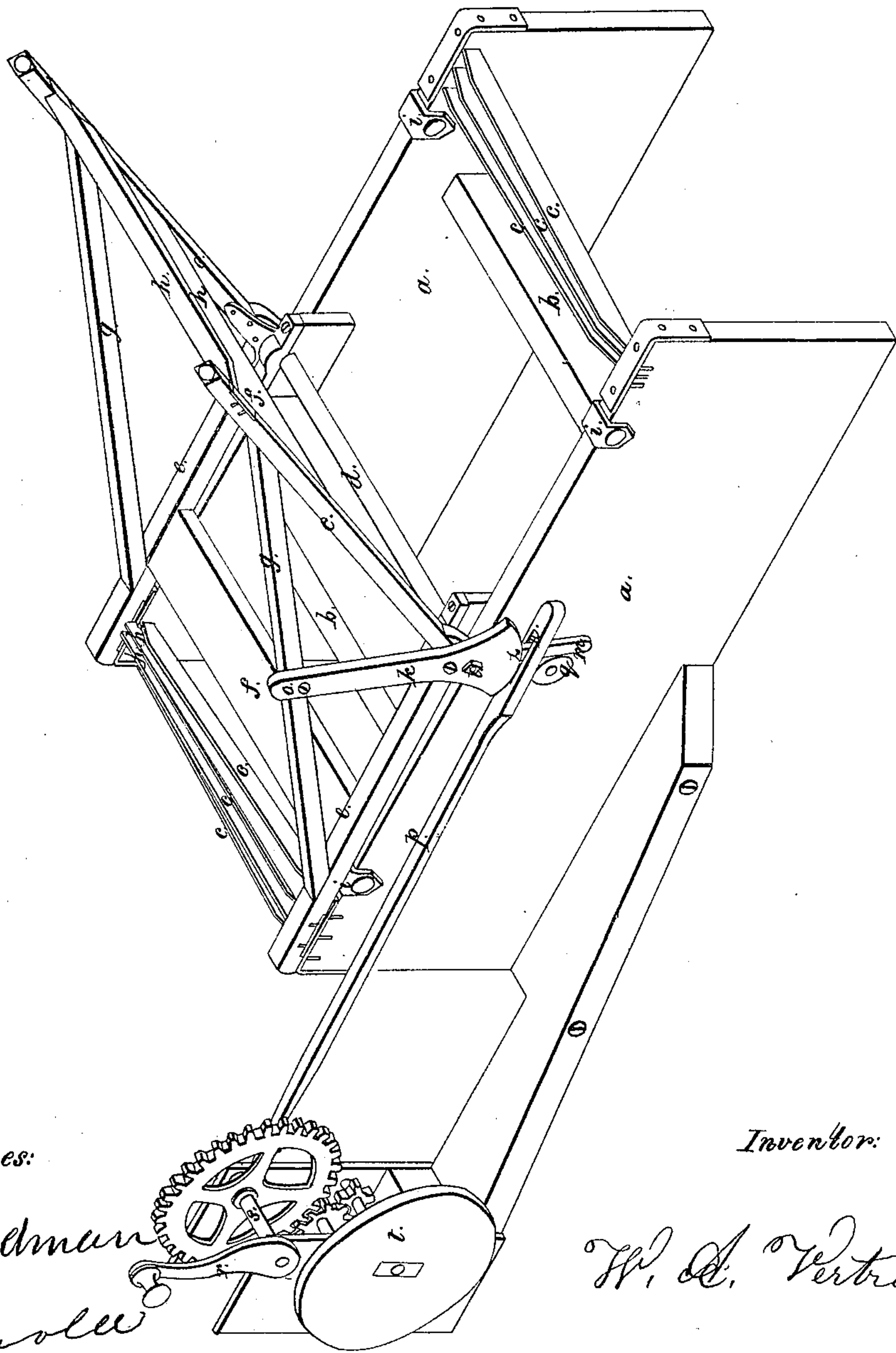


W. A. VERTREES.
HEMP BRAKE.

No. 25,292.

Patented Aug. 30, 1859.



Witnesses:

G. Bedman
J. H. Moore

Inventor:

W. A. Vertrees

UNITED STATES PATENT OFFICE.

WILLIAM A. VERTREES, OF WINCHESTER, MISSOURI.

IMPROVEMENT IN HEMP-BRAKES.

Specification forming part of Letters Patent No. 25,292, dated August 30, 1859.

To all whom it may concern:

Be it known that I, WILLIAM A. VERTREES, of Winchester, in the county of Clarke and State of Missouri, have invented a new and useful Improvement in Hemp-Breakers; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawings, forming part of this specification, which is a perspective representation of my improved machine for breaking hemp or flax.

The object of my improvement is the construction of a machine which shall break hemp or flax with a rebounding stroke similar in kind to but greater in degree than that given by hand with a flail. My improvement consists in the use of a vibrating breaker so connected with the machinery by which it is operated that while the swords or breakers are thrown with violence against the hemp or flax they are only operated upon directly by the motive power during the commencement of each stroke, and fall upon the flax or hemp freely by their own gravity with the added impetus of the motive power, but disconnected from the machinery at the time when the swords strike the flax or hemp.

In order to enable others skilled in the art to make and use my improved hemp and flax breaker, I will proceed to describe its construction and operation.

In the drawings, *a a* is a strong frame, composed of two parallel side pieces connected by the cross or end pieces, *b b*. At each end of this frame is placed a set of three or more swords, which are blades of wood or iron, *c c c*, having a dull blunt edge turned upward. These swords are not parallel to each other; but are nearer together at one end of the swords than at the other. Midway from either end of the frame, and working in journal boxes or bearings just inside of the side pieces, *a a*, and level with the top of the frame, is a horizontal shaft, *d*, at each side of which are two arms, *e e*, which are rigidly fixed to the shaft and radiate from it as a center at an angle of about sixty degrees to each other. Each of these arms is equal in length to one-half of the length of the frame *a a*, and they are placed immediately over the side pieces, *a a*, so that the arms alternately rest on the top of the side pieces. The extremities of the two arms *e e* at each side are connected together by a tie, *g g*, and the arms

on opposite sides of the machine by cross-pieces *f f*. Near the extremity of the arms *e e* are placed swords or breakers *h h*, which are secured to the opposite arms of the breaker-frame in such a manner that when one pair of arms lie on top of the side pieces of the machine, the upper swords, *h h*, fastened to these arms, pass down into the space between the swords *c c c*, fastened to the frame. A cushion of india-rubber, *i*, or other suitable material is placed on the top of the side pieces of the frame—one at each corner of the machine near the swords *c c c*—so as to break the force of the stroke of the arms on the top of the side pieces when there is no flax between the breakers, which deadens the noise and prevents unnecessary jar to the machinery. The arms *e e*, &c., connected together by the ties *g g* and cross-pieces *f f*, and furnished with swords *h h* at each end, form a vibrating brake whose center of motion is the shaft *d*. This vibrating brake is made to vibrate rapidly, the swords at each end being alternately thrown down with considerable force until the arms rest on top of the frame, and the upper swords, *h h*, pass into the spaces between the lower swords, *c c c*. The flax or hemp, being placed on top of the lower swords, *c c c*, is broken by the continual action of the brake or swords *h h*. It is important, however, that the upper swords should not fall on the flax with a rigid stroke, the length of which is determined by the stroke of a pitman, as the effect of this would be that if too large a quantity of flax were placed between the swords they would either strike it too hard or the machine would be likely to give way; or, if too small a quantity were placed between the swords it would not be struck with sufficient force. The breaker should be free to rebound after each stroke, and yet the force of the stroke should be sufficiently violent to perform the work efficiently, or, in other words, the stroke of the breaker should be similar to that given by a man's hand with a stick or flail, and yet have the increased power afforded by the use of machinery. To effect this is an important part of my invention, which I will proceed to describe. A lever, *k*, having its center or fulcrum at *l*, being one extremity of the shaft *d*, is fastened to one side of the vibrating breaker-frame, one end of the lever *k* being fastened at *o* to the tie *g* midway from the extremities

of the arms *e e*, so that when the lever *k* is perpendicular the arms *e e* are both raised from the side pieces of the frame *a a*, and the tie *g* is level. The lower extremity of the lever *k* on the other side of the center *l* from the point *z* terminates in a short arm, *m*, which passes through a long slot, *n*, in the ends of the pitman *p*. Immediately above the short arm *m* there is a curved shoulder, *z*, on the lever *k*, which prevents the pitman slipping too far up on the lever *k*, and the pulley *q*, which rotates freely and is pivoted to the side of the frame *a* below the shaft *d*, supports the slotted end of the pitman *p* and prevents its falling down. This pitman *p* receives a reciprocating motion from a crank, *r*, on the shaft *s*, to which motion is communicated through a series of cog-wheels (if necessary) from the steam-engine or other prime motor. A fly-wheel, *t*, regulates the motion of the machine, which, owing to the jerking motion given by the pitman to the vibrating breaker, might otherwise be irregular. The slot *n* in the end of the pitman *p* is so long that it does not come in contact with the short arm *m* until near the end of its stroke, and then only raises the depressed end of the breaker so far as to throw it over the center and allow the other end to fall down by its own gravity, the slot *n* being so long that the short arm *m* does not touch

the pitman *p* until after the vibrating breaker has fallen down and is ready to be again raised on the return-stroke of the pitman. By this means the vibrating breaker is raised and thrown over its center with a violent jerk, the impetus of which adds greatly to the force of the blow of the upper swords, *h h*, on the hemp or flax, and yet the breaker falls freely on the flax, and no matter how large or how small the bunch of flax or hemp the blow is equally efficient, and no injury results to the machine.

Having thus described my improvement in hemp and flax breakers, what I claim as my invention, and desire to secure by Letters Patent, is—

Constructing the rocking breaker-frame of hemp or flax breakers in the manner described, and operating it by means of a slotted pitman in such manner as that while the vibratory motion is communicated from the prime motor to the breakers by machinery, yet they fall on the hemp or flax with a free stroke or flail motion, substantially as hereinbefore described.

In testimony whereof I have hereunto set my hand this 19th day of October, A. D. 1858.

W. A. VERTREES.

Witnesses:

MARTIN G. CUSHING,
AND. McMASTER.