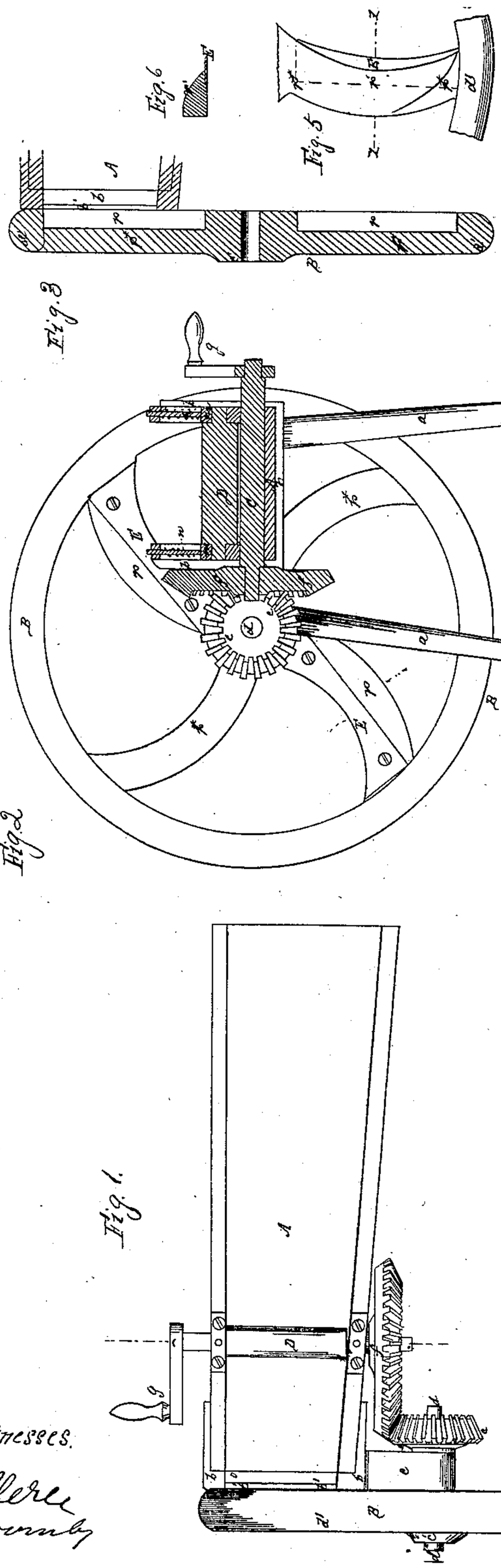
L. B. HOIT.

STRAW CUTTER.

No. 75,269. Patented Mar. 10, 1868.



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Letters Patent No. 75,269, *dated March* 10, 1868.

IMPROVEMENT IN STRAW-CUTTERS.

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, L. B. HOIT, of Cedar Falls, in the county of Black Hawk, and State of Iowa, have invented certain new and useful Improvements in Straw-Cutters; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a portion of this specification, in which—

Figure 1 is a plan view of a straw-cutter constructed according to my invention.

Figure 2 is a vertical transverse section of the same, taken in the line *x x* of fig. 1.

Figure 3 is a transverse section of one portion of the same, taken horizontally.

Figure 4 is a detached view of one of the feed-rollers of the apparatus.

Figure 5 is a detached view of one of the knife-bearing arms of the balance-wheel of the apparatus.

Figure 6 is a transverse section of the same, taken in the line *z z* of fig. 5.

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

This invention relates to that class of straw-cutters in which the cutting-knives or blades are arranged upon the radial arms of a suitable balance-wheel; and it consists in the combination of a balance-wheel, provided with such radial knife-carrying arms, with two bevel-gears, a pair of feed-rollers, and a crank, in such manner that the knives will be operated by the motion given to the feed-rolls by the crank, and whereby a very strong, cheap, and efficient straw-cutter is secured.

The invention further consists in so arranging those arms of the balance-wheel intermediate with the knife-carrying arms thereof, with reference to the said knife-carrying arms and the feed-rollers of the apparatus, that the straw, as it is fed forward by the rollers, may not come in contact with or be struck by the aforesaid intermediate arms, which would seriously impair the efficient working of the apparatus.

The invention further consists in certain novel means whereby the apparatus may be adjusted to cut the straw into greater or less lengths, and whereby the rapid and complete discharge of the cut straw from the cutting-devices is secured.

To enable others to understand the construction and operation of my invention, I will proceed to describe it with reference to the drawings.

A represents the cutter-box of the apparatus, supported upon suitable legs, *a*, and having fitted upon or around its forward or smaller end an iron casting, *b*, which not only serves to strengthen the said end of such cutter-box, but which may be provided with sockets for the reception of the foremost of the legs *a*, and is furthermore furnished with a lateral extension, *c*, in which is formed a bearing for a short shaft, *d*, to the forward end of which is attached a transverse balance-wheel, B, one side or lateral portion of which plays past the front end of the cutter-box A, as indicated more fully in figs. 1 and 2.

To the rear end of the short shaft just mentioned is secured a bevel-gear, *e*, into which gears or meshes a similar bevel-gear, *f*, fitted upon one end of the lowermost transverse feed roller, C, which works in suitable bearings provided in the cutter-box, the said feed-roller C having its upper side somewhat above the bottom of the cutter-box, and provided at that end opposite the gear *f* with a crank, *g*, by which the requisite rotary motion is communicated thereto.

The other feed-roller is shown at D, and is situated immediately over the roller C, parallel therewith, and with the ends of its shaft fitted into sliding bearings *m*, pressed downward by springs *n*, which allow the said shaft D to yield, in an upward direction, to a degree proportioned to the quantity or thickness of straw fed between the two rollers.

The balance-wheel B is formed with, preferably, four curved radial arms, *r r*$^{\times}$, upon the inner sides of the two opposite ones, marked *r*, of which are firmly secured knives or cutters, E, of a correspondingly curved form, the said knives playing closely past the front edge of the bottom of the cutter-box, the said front edge being furnished with a plate, *b'*, designed to form a fixed shear-edge, on which the straw rests while being cut off or severed by the knives E of the balance-wheel.

In using the apparatus, the crank *g* is turned in the requisite direction, and the straw or hay, being placed in the cutter-box A, is fed forward between the feed-rollers C D, and, as it projects beyond the front edge of

the bottom of the aforesaid box, is cut off by the knives E, on the arms *r* of the balance-wheel B, as such knives move past the said edge, as hereinbefore explained.

Inasmuch as the feed or forward movement of the straw is continuous, the arms $r^{\times}$, intermediate between the knife-carrying arms *r*, would strike the forwardly-projecting portion of the straw, if they were arranged in line with said knife-carrying arms, and would thus materially interfere with the efficient operation of the apparatus, and, to avoid this objection, the aforesaid intermediate arms are placed farther forward, or, in other words, nearer the front end of the hub *c'* and rim *d'* of the balance-wheel than the knife-carrying arms *r*, so that they move past the front end of the cutter-box, at such distance therefrom as not to strike the straw projecting from the said end.

Inasmuch as the length of the feed produced by each rotation of the crank *g* is proportioned to the circumference of the feed-roller C, to which the said crank is attached, it is designed to adjust the apparatus to cut the straw to greater or less lengths, as may be required, by slipping or removing the roller C from its bearings, and substituting, in the place thereof, one of a greater or less size, according as it is desired to cut the straw in greater or less lengths, the rolls C, of different sizes, being, as it were, interchangeable.

If those edges of the knive-carrying arms *r* adjacent to the knives E were nearly or quite at right angles to the flat surfaces of the said knives, the said edges of the arms would strike and catch the straw, as it is cut off, as hereinbefore explained, and would, to some extent, carry the same around with the rotation of the said arms, thus clogging and interfering with, to some degree, the proper action of the cutting-devices. To prevent this result, the outer surfaces of the arms *r* are recessed or made sloping toward the cutting-edges of the knives, as shown in fig. 5, and also indicated in fig. 6, the arms *r* being recessed the most deeply at their central parts, *r'*, and the peculiar slanting surfaces thus presented to the lengths of cut straw enabling the same to glide from such surfaces, thus securing the desired result.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The balance-wheel B, when provided with recessed and bevelled arms *r r* and curved knives E, attached thereto, in combination with the bevel-gears *e f*, the interchangeable feed-rollers C C D, and crank *g*, as and for the purpose specified.

2. The within-described arrangement of the intermediate spokes, *r*, of the balance-wheel, with reference to the knife-carrying spokes *r* thereof, and the interchangeable feed-rollers C C, substantially as and for the purpose specified.

3. The method, herein described, of graduating the feed by the detachable or interchangeable rolls C, of different sizes, arranged to operate underneath the yielding roll D, and operated by the crank *g*.

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Witnesses:
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