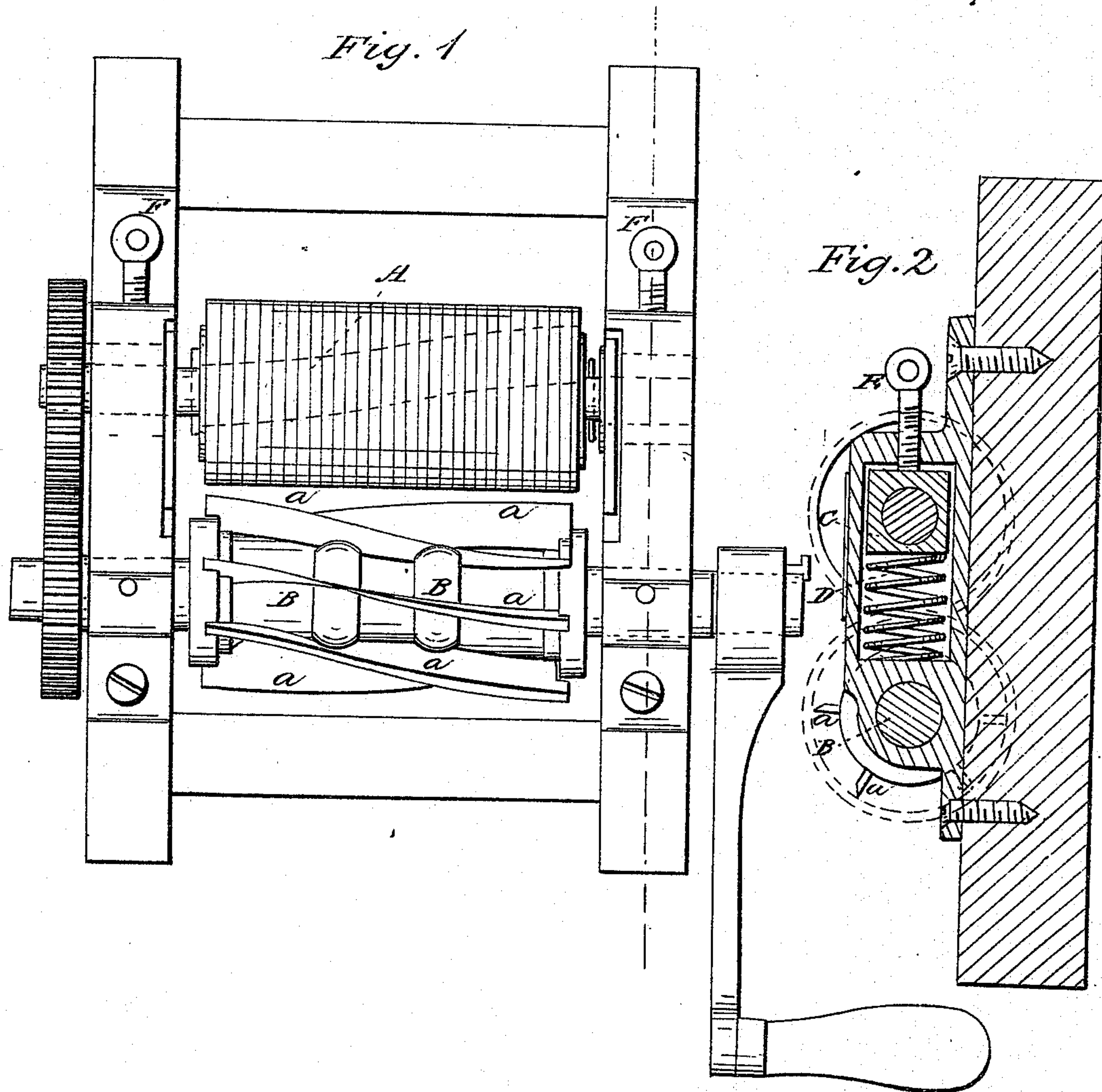


W. GALE.
Straw Cutter.

No. 61,932.

Patented Feb. 12, 1867.



Witnesses:
J. G. Clayton
Jno. D. Patten

Inventor:
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WARREN GALE, OF CHICOPEE FALLS, MASSACHUSETTS.

Letters Patent No. 61,932, dated February 12, 1867.

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, WARREN GALE, of Chicopee Falls, in the county of Hampden, and in the State of Massachusetts, have invented a certain new and useful "Improvement in Feed-Cutters;" and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

To enable others skilled in the art to make and use my invention, I will now describe its construction and operation. In the drawings—

Figure 1 is a plan view.

Figure 2 is a section in which the gearing is shown.

The nature of my invention consists in gearing together the two cylinders of an ordinary slide cylinder straw-cutter. These cylinders usually consist of a hide roller, used to cut against, and which I call the pressure cylinder A, and a cylinder armed with spiral knives, *a*, which I call the cutting cylinder B; C the sliding-box; D the spring; E the screw.

My pressure cylinder is constructed with disks of raw-hide, leather, wood, or other similar material. Each disk has a hole in its centre, and by putting a sufficient number of these disks upon a shaft we form the pressure cylinder. These disks should have sufficient material in them, so that when the cylinder which they form is worn away, so that the gearing can no longer drive the machine, we can remove the gearing and a very considerable amount of use can be obtained from the pressure cylinder in the future. Having learned from experience that none of the metals can be used without gearing, I especially exclude them in this specification. I have found by repeated trials that gearing the two cylinders together is of very great advantage in this class of cutters. When made without gearing, the pressure cylinder is driven wholly by the action of the knife edges striking against it, and this is always more or less detrimental to the knives, as well as disastrous in its effects on the pressure cylinder, for the knives strike at different places on the cylinder, scarcely ever on the same place. It follows that each of the knives is constantly making new cuts on the cylinder, and eventually causing the machine to run hard, besides rapidly rendering the machine perfectly useless. This quick destruction of the pressure cylinder, requiring frequent and expensive repairs, is one of the most objectionable features of this class of straw-cutters. By the use of the gearing the durability of the cylinder A is increased at least five times more in using it thus, than in using it without gearing, even before cylinder A is worn down the depth of the teeth. And when the cylinder A is constructed as above described, after it is worn so that the gearing can no longer be used, it can be removed and still more use be gotten out of the cylinder A. I am aware that machines of this class have heretofore been constructed with gearing; as, for example, my patent of September 12, 1854; and also in my pending application, executed in 1866. In my patent of September 12, 1854, a pressure cylinder is shown with a strip of hide to cut against. This does not anticipate my present invention, which consists in gearing a cylinder of spiral knives to a roller of full cylindrical form, constructed of disk of hide or wood. In these machines, as ordinarily constructed, in order to insure a greater durability in the hide cylinders, so as to prevent almost immediate repairs, the diameter of the pressure cylinder is generally made considerably greater than the cutting cylinder. But there result from this several disadvantages. The cost is greatly increased, the enlarged cylinder does not work so well as the small cylinder, and it does not admit of so large a body of straw to the knives as the small cylinder. When gearing is used, it is essential that the edge of the knife, and the surface of the cylinder where the knife strikes, should move at equal speed while in contact, hence the cylinder which is cut against is not generally made of a larger diameter than the cutting cylinder; consequently more than the cost of applying the gearing is saved in cost of material when the cylinder is constructed of hide. The application of gearing to this class of cutters will be useful not only in constructing new machines, but also in repairing old ones, as most any machine of this class now in use can have the gearing applied, and thereby greatly improve the machine. The wooden pressure cylinder, constructed as hereinbefore described, although it may not be in all respects equal to the raw-hide, when used with gearing, will answer a good purpose for repairing old machines now in use. The wooden cylinder and the gearing can readily be made and applied in the ordinary machine shops of the country, frequently at much less cost than the mere cost of transportation of the old machine to the factory. While the hide roller is constructed of raw-hide, prepared for this purpose expressly; is not easily obtained by country shops; is cut

into form and pressed into a roller by machinery constructed for this object alone, for these reasons I recommend wooden pressure cylinders for repairs. The hide cylinder is constructed by me in the usual manner. When I use a wooden cylinder, I construct it of disks of wood about an inch thick, the grain of each disk being across the grain of its adjoining disk or disks. The disks should be firmly secured on the shaft and well glued together, using glue not easily dissolved in water, and only the best seasoned wood. I construct the machine with the usual crank and fly-wheel, and mount it on a suitable frame. The feed or material to be cut, being placed in the box within the range or reach of the cutting and pressure cylinders, is drawn into the machine and cut off in the usual manner. The knives may be put on in any of the usual ways of so doing. When the pressure cylinder has become worn, so as to not cut well, the screws E are turned back, the gearing released, and a new adjustment made, bringing the knife in contact with the pressure cylinder in a new place.

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

1. The pressure cylinder A, constructed substantially as described, and geared to the cutting cylinder B, in such a manner that the edge of the knife or knives shall, at the point of contact with the pressure cylinder, move at equal speed therewith, when the said pressure cylinder is constructed of disks of wood, raw-hide, leather, or other similar material, (not including metals of any kind,) and is of full cylindrical form, substantially as set forth.

2. I claim, in combination with the above claim, sliding-box A, screws E E, spring D, operating as described and the purposes set forth.

In testimony that I claim the above-described invention, I have hereunto signed my name this 15th day of October, 1866.

WARREN GALE.

Witnesses:

S. R. KNAPP,
B. BASSETT.