

W. GALE.
Straw Cutter.

No. 11,667.

Patented Sept. 12, 1854.

Fig. 1.

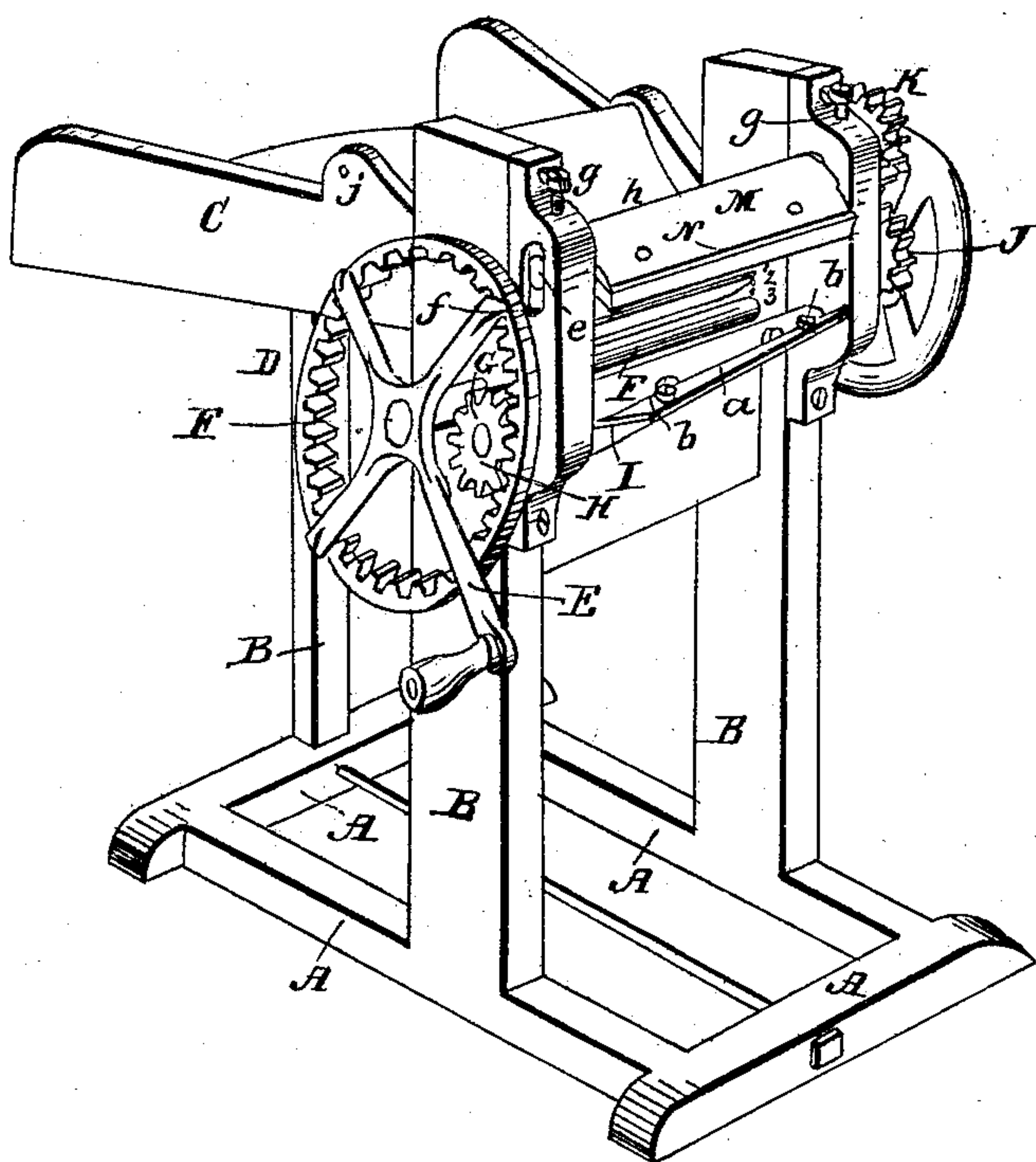
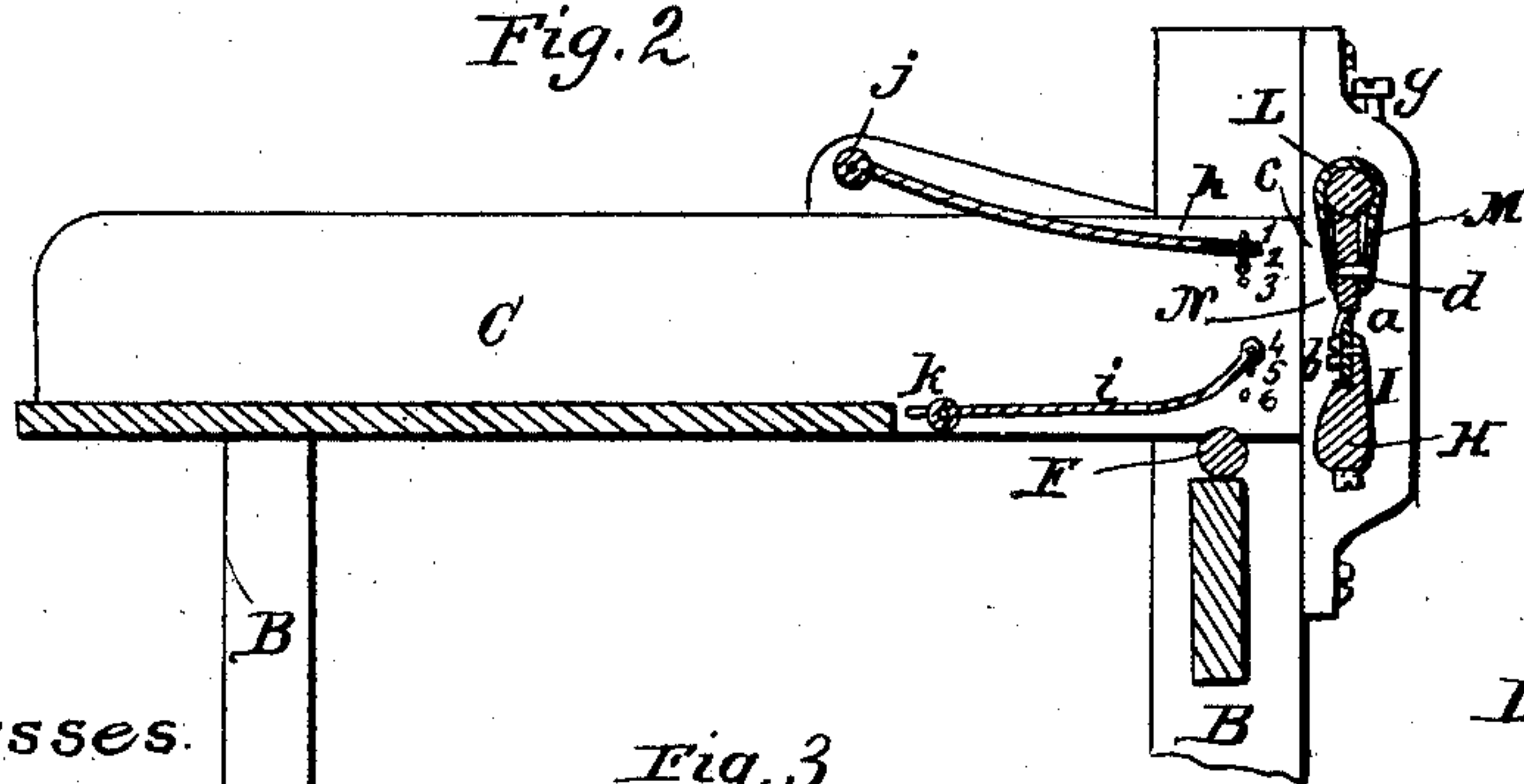


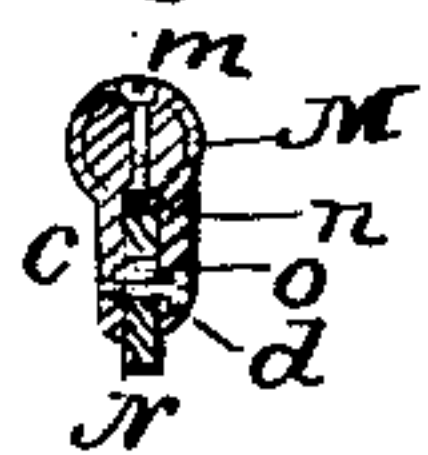
Fig. 2.



Witnesses.

Royal Ball
H. B. Harvey

Fig. 3.



Inventor:

Warren Gale

UNITED STATES PATENT OFFICE.

WARREN GALE, OF TROY, NEW YORK.

STRAW-CUTTER.

Specification forming part of Letters Patent No. 11,667, dated September 12, 1854; Reissued April 3, 1860, No. 938.

To all whom it may concern:

Be it known that I, WARREN GALE, of Troy, in the county of Rensselaer and State of New York, have invented certain new and
5 useful Improvements in Straw, Hay, and Stalk Cutters or for other Similar Purposes; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompany-
10 ing drawings, making a part thereof, in which—

Figure 1, represents a perspective view, and Fig. 2; a vertical longitudinal section through the same, similar letters in both the
15 figures referring to like parts.

The nature of my invention relates to the arranging of the knife or knives of the cutting cylinder, so that they shall cut against flanges, or projections on the opposite cylin-
20 der. And also in combination with the cutting cylinders, the method of arranging the mouth or throat, through which the straw is fed, so that it shall govern the feed of the straw to the cutters.

25 To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

30 A, represents the base of the straw-cutter, and B, the uprights, for supporting the straw box C, and the other operating parts of the machine.

D, is a master cog wheel, provided with a crank E, and arranged on a shaft F, passing
35 through the machine and suitably supported therein. The cogs on the wheel D, the arranged on its inner perimeter, and a spur or pinion G, on the shaft H, meshes with said wheel D, so as to receive its motion there-
40 from. The shaft H, is the axis of what may be termed the cutting cylinder; it has a flange I, upon one side of it to which the knife *a*, Fig. 2, is attached by set screws *b*, passing through suitable slots, so as to make
45 said knife adjustable. On the opposite end of the shaft H, from the spur G, is another spur gear J, which meshes with a similar spur K, on the shaft L, which forms the axis of the upper cylinder, against a flange or
50 projection M, on which the knife of the lower cylinder cuts—said flange being provided with a piece of leather, raw hide, or similar soft substance N, to protect the edge of the knife.

55 In Fig. 3, may be more particularly seen

the method of securing and adjusting the leather or material against which the knife cuts. The flange M is a part of the cylinder being on one side thereof, and the leather is placed against the inner side of it, and a
60 plate *c* against the leather, the whole being firmly held together by the screws *d*. There is a plate *n* over the top edge of the leather, against which set screws *m* passing through
65 the axis of the cylinder press, and by means of which set screws and plate, by loosening the screws *d*, the leather may be forced down and adjusted to the knife, as said leather be-
comes worn or cut away. A slot *o*, is cut in the leather where the screws *d* pass through
70 it, to admit of its adjustment. The journals *e*, of the upper cylinder rest in oblong slots *f*, so that by means of the set screws *g*, they may also be adjustable if found expedient, to the knife.
75

I am aware that straw cutters have been made with a series of knives cutting against a full cylinder, but my machine differs from these essentially, inasmuch as where a full cylinder is used, to work well, the knives
80 must all be kept in a line while in my machine the knife or knives are only to be adjusted to the projections which they cut against, without regard to the other knives. Besides, it is difficult where the knives fol-
85 low each other so closely, in cutting against a full cylinder to feed in the straw.

There is no adjusting or varying of the length of cut, with a series of knives cutting against a full cylinder, and the difficulty
90 would not be entirely overcome, by the use of a single knife cutting against a full cylinder, because in such an arrangement you could make but one length of cut and that very long. If it should be desirable, in this
95 class of machines, to cut the material fine, say one half of an inch in length, it would be necessary to place the knives so near together, and make them so narrow and thin, as to materially impair their durability, or
100 that of the machine, and make them much more difficult to be kept in order. Whereas, in my machine the difficulty is fully overcome by using one knife, or if more than one is used in placing them so far apart as
105 to have ample room between them.

I do not mention the class of machines which make a shear cut—among which may be found those with one knife cutting shear
fashion against or along the edge of an- 110

other blade or bar, as I consider them of a different character from mine.

The second part of my invention relates to the feeding in of the straw, and which is constructed as follows: *h*, is an upper and *i* a lower throat piece, so formed as to incline toward each other where they approach the cylinders the one *h*, is hinged at *j*, and near its other end are made in the side of the straw box the holes 1, 2, 3, by means of a pin in which that end may be raised or lowered—the other one *i*, is hinged in a slot *k*, so as to be moved toward or from the cylinders, and at its other end toward or from the plate *h*, by means of the holes 4, 5, 6, and a suitable pin fitting into them. The quantity of straw fed up to the knives is regulated by these pieces *h*, *i*; by opening them the straw is cut of a greater length, and by closing them it diminishes in length, so that any desirable lengths may be cut at pleasure, in the same machine.

The upper throat piece *h*, being slightly curved, is so hinged in relation to the flange *M*, that the front edge of said throat-piece nearly meets the piece of leather *N* (at each revolution of the latter) whether the front of said throat-piece rests at hole 1, 2 or 3. And the lower throat piece *i*, from its double adjustability, can be made nearly to meet the knife (at each revolution of the latter) whether the front of piece *i* rests at hole 4, 5 or 6. Now if the throat be expanded the knife catches the straw (at each revolution of the knife) sooner than when the throat is contracted and consequently the straw is drawn forward by the knife (at each revolution of the latter) in proportion to the variation of the point at which the throat presents the straw to the grasp of the knife and opposing flange. By this arrangement the throat coöperates with the flanged cylinders to govern the length of cut.

As the axes *H*, *L*, are revolved the knife on one comes against the straw on the one

side close to the throat, while the flange on the other strikes the straw immediately opposite the knife. The two now act as a pair of nippers, gradually closing and cutting, and at the same time by their rotation gradually drawing the straw forward, so as to be cut or rather caught and cut by the next rotation—the facility with which it is allowed to pass through the adjustable throat causing it to pass to a greater or less distance. When the knife and flange meet in a perpendicular plane as in Fig. 2, the straw is cut, while immediately behind that plane remains the straw drawn forward by the last operation.

It is obvious that my improvement is applicable to spiral or oblique knives, as well as to the straight ones, and that it may be used for cutting any kind of vegetable matter, other than that mentioned.

Having thus fully described the nature of my invention I would state that I am aware that throats to straw cutters have been made adjustable so as to approach the knife or recede from it, and also so as to contract or expand in order to compress the straw more or less. Therefore I do not claim these features as heretofore used, but

What I claim herein as new and desire to secure by Letters Patent is—

1. The arranging the flange or flanges on one cylinder, so that they will meet the knife or knives on the other cylinder, as the two cylinders rotate, substantially in the manner and for the purpose described.

2. I also claim in combination with the flanged cylinders, the throat placed in such relative position to said flanged cylinders as to nearly meet the latter at a desired point in their revolution, thus assisting to give a long cut if said throat be expanded and a short cut when the throat is contracted substantially as described.

WARREN GALE.

Witnesses:

ROYAL BALL,
HENRY B. HARVEY.