W. B. FREDERICK.

Straw Cutter.

No. 37,861. Patented March 10, 1863.

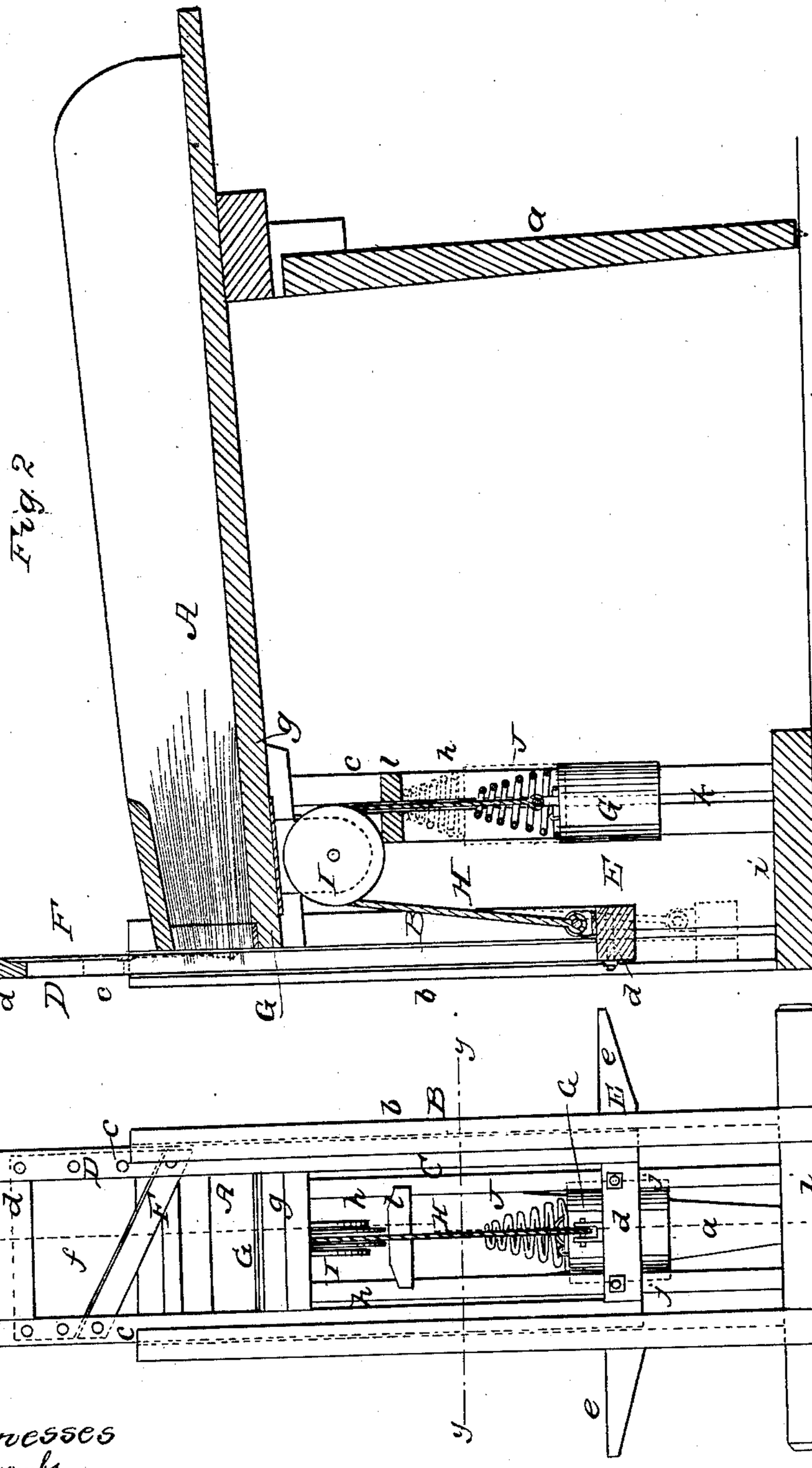

Fig. 2.

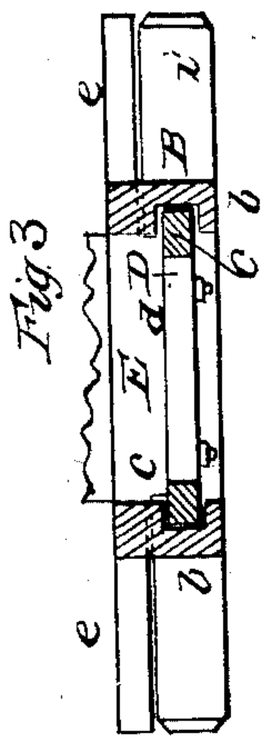

Fig. 3

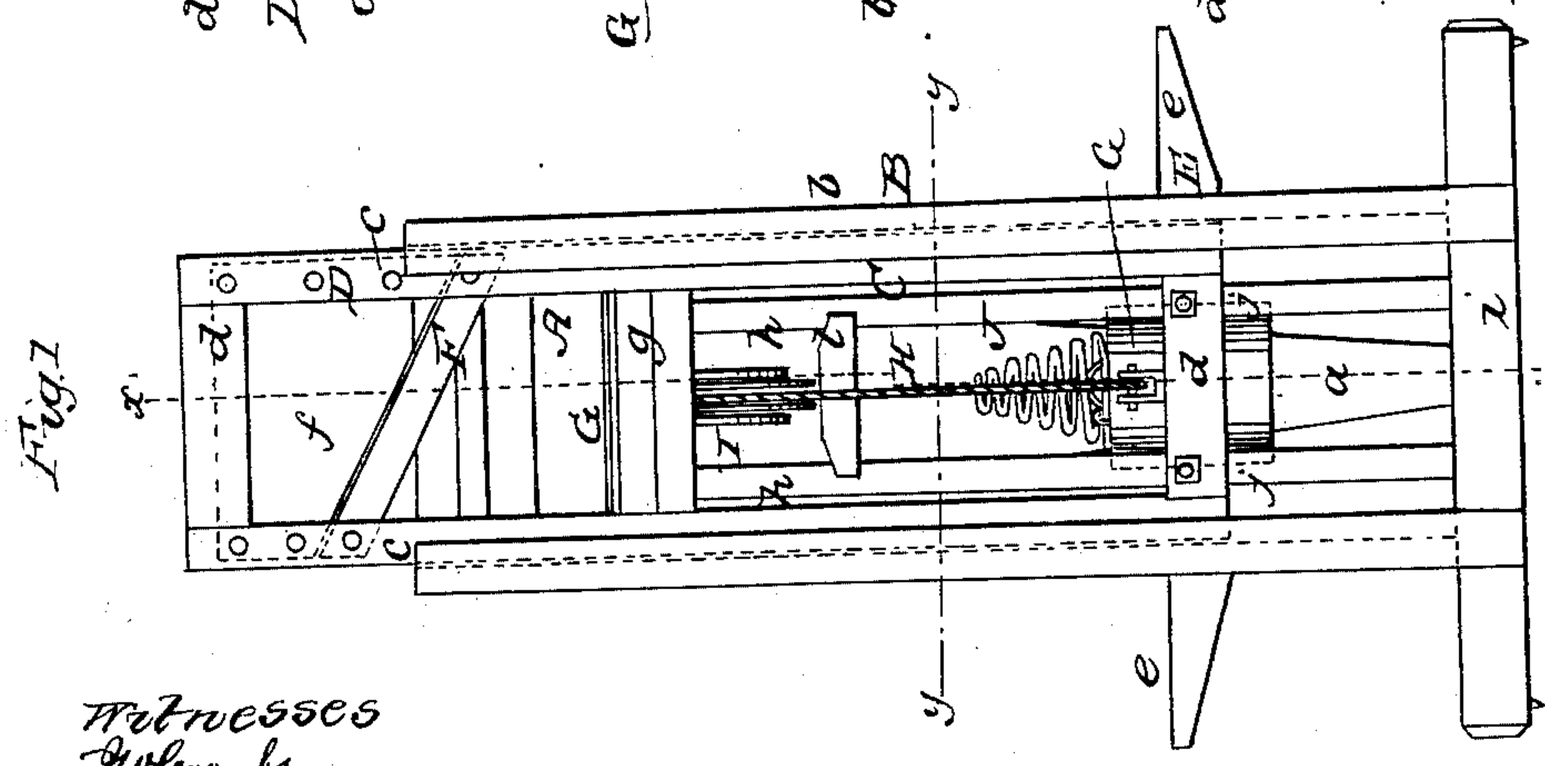

Fig. 1.

Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM B. FREDERICK, OF PONTIAC, MICHIGAN.

IMPROVEMENT IN STRAW-CUTTERS.

Specification forming part of Letters Patent No. **37,861**, dated March 10, 1863.

To all whom it may concern:

Be it known that I, W. B. FREDERICK, of Pontiac, in the county of Oakland and State of Michigan, have invented a new and Improved Machine for Cutting Hay, Straw, Stalks, &c.; 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 part of this specification, in which—

Figure 1 is a front elevation of my invention; Fig. 2, a side sectional view of the same, taken in the line *x x*, Fig. 1; Fig. 3, a horizontal section of the same, taken in the line *y y*, Fig. 1.

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

This invention relates to an improvement in that class of straw, hay, and stalk cutters in which a reciprocating knife is used and arranged to operate over the mouth of the feed-box.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a feed-box, which may be of the usual form, and supported at its back end by a leg, *a*, the front end being supported by two upright frames, B C. The frame B is at the mouth of the feed-box, A, and it is composed of two uprights, *b b*, between which a knife-frame is fitted and allowed to work freely up and down. The knife-frame D is of rectangular form, and is composed of two uprights, *c c*, connected at their upper and lower ends by cross-pieces *d d*. To the lower end of the knife-frame a treadle, E, is attached, said treadle extending out beyond either side of the frame B, so as to form two foot-pieces, *e e*, as shown clearly in Fig. 1.

F is a knife, which is secured in the upper part of the frame D in an oblique position, the space in the frame above the knife being filled by a piece of sheet metal, *f*. The knife F works over a ledger-knife, G, which is secured as usual to the front edge of the bottom *g* of the feed-box A. The frame C is directly back of the frame B, and it also is composed of two uprights, *h h*, the lower ends of which are attached to the same base, *i*, as the uprights *b b*, of the frame B. Between the two uprights *h h* of the frame C there is placed a weight, G′. This weight may be of cylindrical form, and it has flanges *j j* at two opposite points, which fit in vertical grooves *k* in the inner sides of the uprights. The weight G′ is connected by a cord, H, to the treadle E, said cord passing over a pulley, I, which is attached to the under side of the feed-box A, the cord H being attached to the center of the treadle E. The weight G′ is designed to counterpoise the knife-frame D, and to the upper end of said weight there is attached a spiral spring, J, the upper end of which, just before the knife-frame D reaches the lowest point of its downward movement, comes in contact with a cross bar, *i*, in the frame C.

The operation of the machine is as follows: The hay, straw, stalks, or other substances to be cut are placed in the feed-box A, and fed toward the knife F by hand or any suitable mechanism. The operator places his foot on either of the foot-pieces *e* of the treadle E, and by depressing the treadle forces down, of course, the frame D and the knife F, the latter acting upon the substance or material in the box A, cutting off the portion that projects beyond the ledger knife G. As the knife-frame D approaches the lowest point of its descent, the spring T is compressed, in consequence of coming in contact with the cross-bar *l*, as shown in red in Fig. 2, and consequently when the treadle E is relieved of the pressure of the foot the spring T will give an impetus to the knife-frame D, and cause it to rise promptly. In consequence of having the knife-frame D counterbalanced by the weight G′, it is made to operate smoothly and without those concussions and jars which would otherwise occur, especially if the spring J were alone employed. The knife-frame also may be operated with great ease by the foot of the operator, and at either side of the machine.

The spring, in combination with the weight, has two functions: First. It prevents the concussion or jar that would ensue by the sudden descent of the knife-gate immediately after the straw or other substance was cut through. That, in itself, is not new. Beds of printing-presses and other reciprocating bodies are similarly provided. But the spring also performs another office. As the weight just or nearly balances the knife-frame, the latter, after having cut through the straw, would of course remain down (the weight not being heavy enough to draw it up again) were it not

for the spring, which, having been already compressed by checking and, as it were, absorbing the momentum of the knife-gate, is just in the position to exert its full force in returning the knife-gate to its original position, ready for another cut or stroke. The gate, being balanced by the weight, only needs to be started back by the spring, and the velocity thus acquired is sufficient to complete the movement. Thus the preventing of the jar by the spring generates in the spring a power (by its compression) which, in turn, returns the knife-gate, thus performing two offices. The spring alone would not do this, neither would the weight alone. It is only by their combination that it can be done, and that combination is new. The plate *f*, above the knife, forms an apron which prevents the ends of the straw from cropping out over the top of the knife when the latter descends.

I am aware that springs have been applied to the reciprocating knife-frames of straw and and hay cutters, and I therefore do not claim a spring thus applied, when separately considered; but

I do claim as new and desire to secure by Letters Patent—

1. The arrangement together of the apron *f*, knife F, gate D, box A, treadle E, weight G′, spring J, pulley I, and connecting-cord H, all in the manner herein shown and described.

2. The combination of the weight G′ with the spring J, for the purpose described.

Witnesses: WM. B. FREDERICK.

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