EDWARDS & DAY.

Straw Cutter.

No. 28,068. Patented May 1, 1860.

Fig. 1,

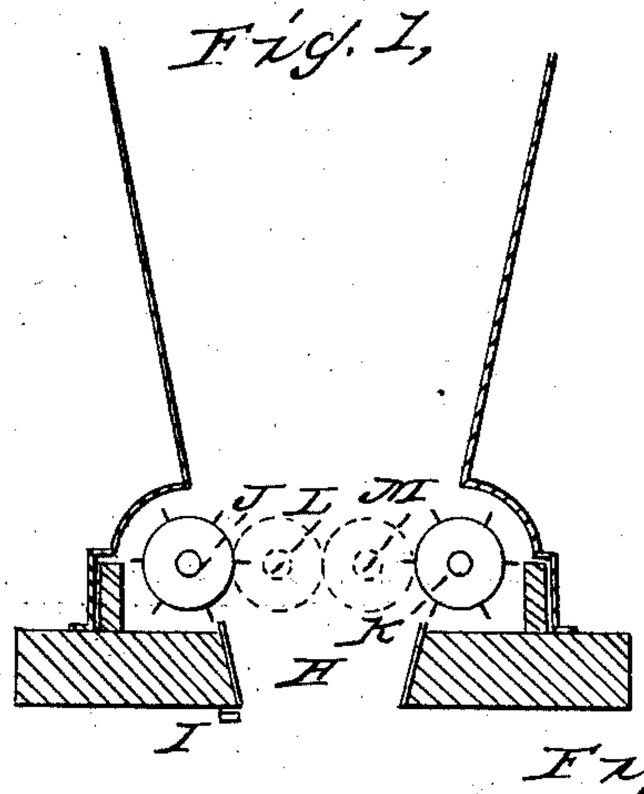


Fig. 2,

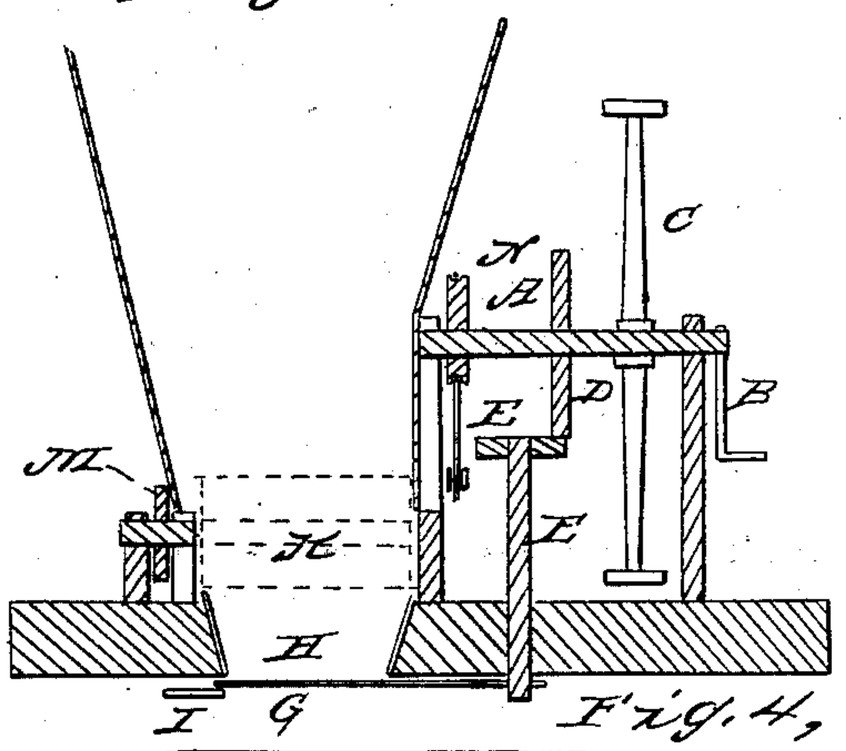


Fig. 3,

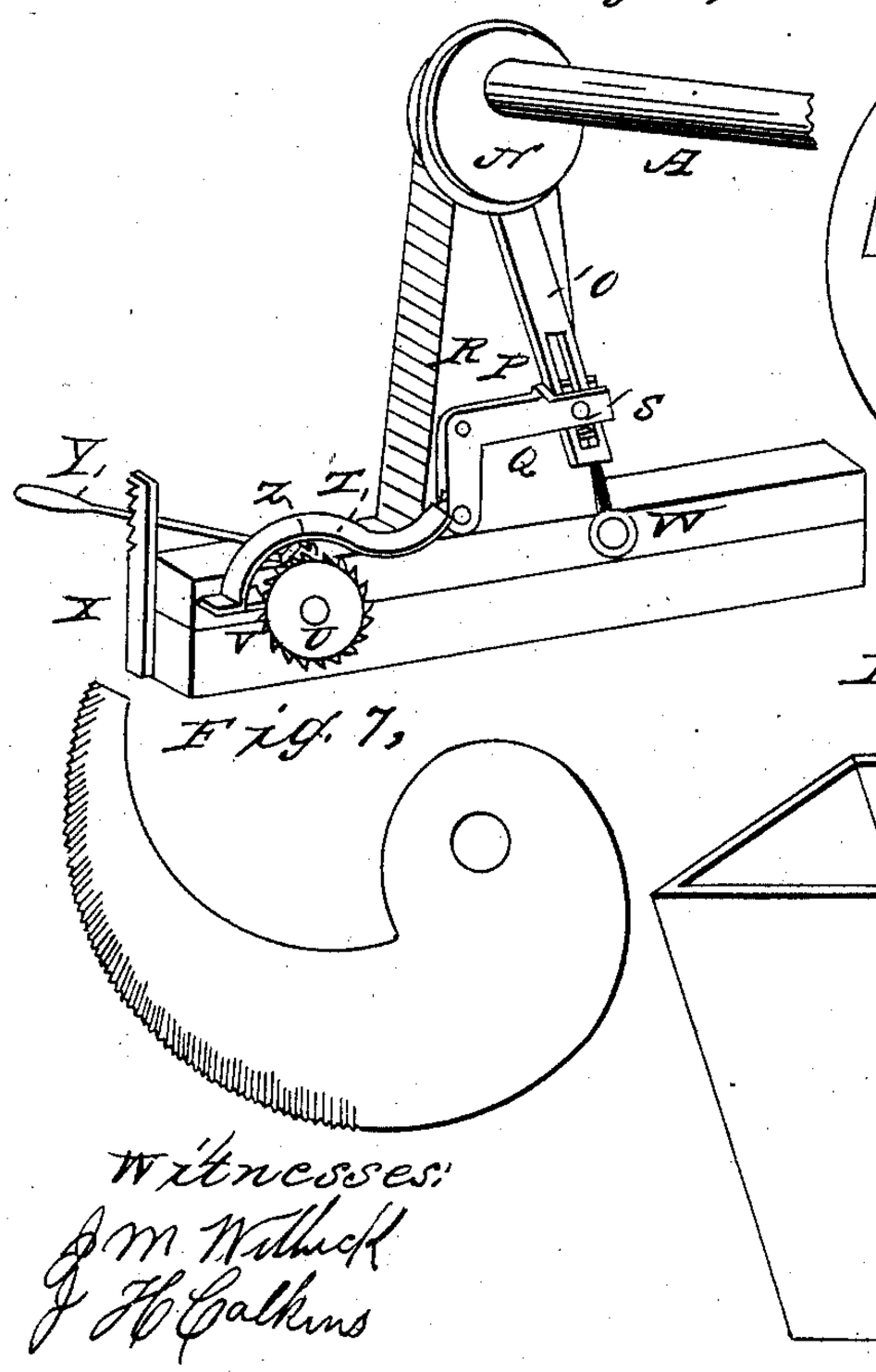


Fig. 4,

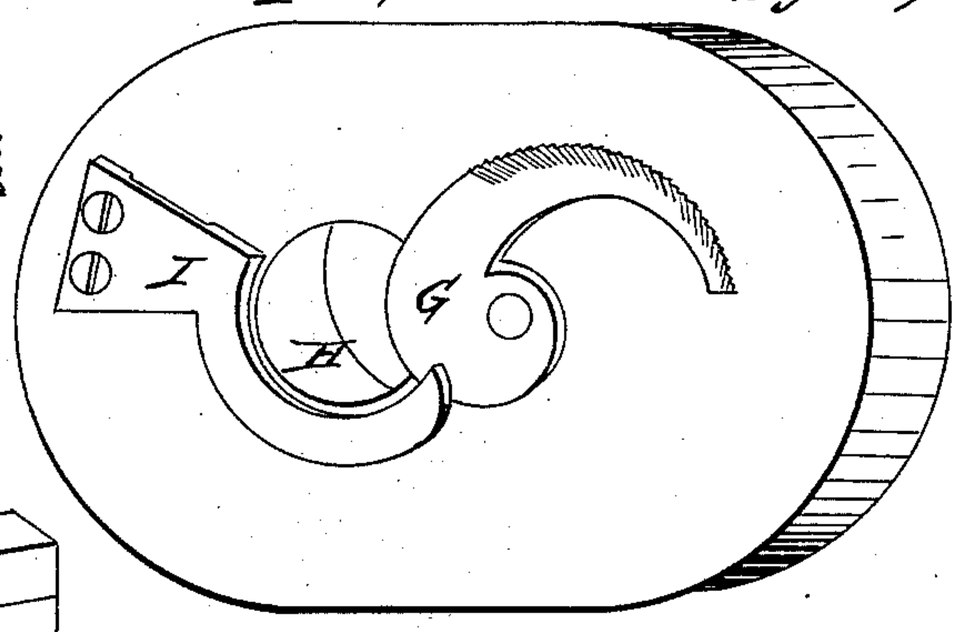


Fig. 5,

Fig. 6,

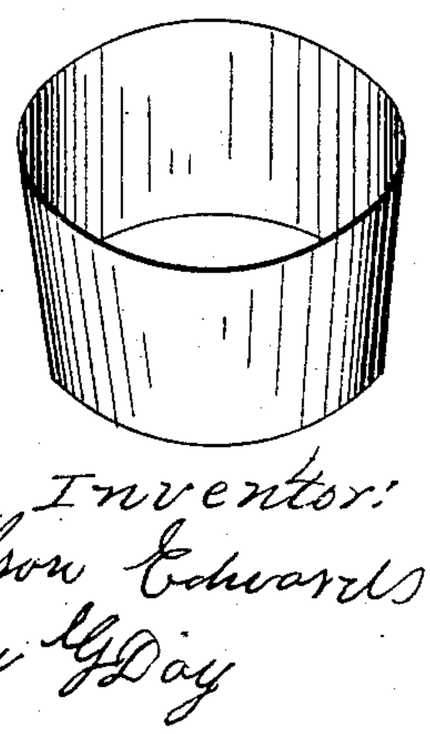
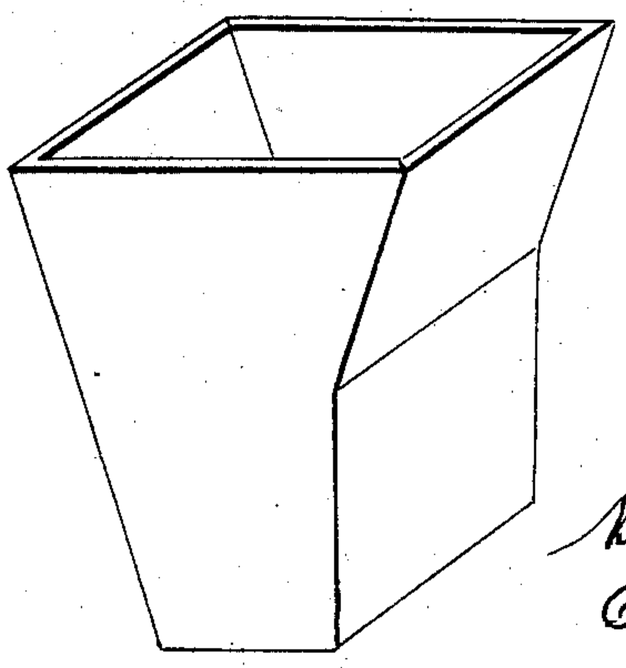


Fig. 7,



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UNITED STATES PATENT OFFICE.

N. EDWARDS AND EDWARD G. DAY, OF NASSAU, NEW YORK.

STRAW-CUTTER.

Specification of Letters Patent No. 28,068, dated May 1, 1860.

To all whom it may concern:

Be it known that we, NELSON EDWARDS and EDWARD G. DAY, of Nassau, New York, conjointly have invented a new and Improved Mode of Cutting Hay, Straw, Stalks, and other Kinds of Feed; and we do hereby declare that the following is a full and exact description thereof, reference being had to the drawings making a part of this specification, in which—

Figure 1, in said drawings is a transverse sectional view, showing transverse sections of the hopper, feeding rollers armed with thin strips of metal, intermediate wheels, compressor H. Fig. 2, is also a transverse section, showing the running gear, and the manner of applying power to the blade G, and gives a longitudinal view of the roller K, the end of which is seen in Fig. 1. Fig. 3, is a section in perspective, showing apparatus for disconnecting the feeding rollers from power gear, and an apparatus for graduating the length of cut of feed. Fig. 4, is a bottom view of the machine, and shows the situation of the blade attached to its shaft. It also shows the compressor in its relative position penetrating the bottom of the machine, and the self-adjusting jaw in its combination with the compressor. Fig. 5, is a hopper which belongs above the rollers and the compressor, into which feed is placed to be cut. Fig. 6, is a conic-circular tube through which the feed passes and is compressed before being cut. Fig. 7, is a geometrical-spiral curve edged blade, with serrates on a portion of its edge.

If we suppose the several figures in the drawings to be combined so as to represent the machine in a complete state, its construction, and the manner of its operation may be understood by supposing power applied to the horizontal shaft A in Fig. 2, by turning the crank B. This causes the shaft and its fly wheel C, to revolve; the rubber friction wheel D, fixed to the shaft also revolves and rotates by means of contact, the horizontal rubber friction wheel E, which is fixed on the top of the perpendicular shaft F, at the lower end of which is fastened the cutting blade G, fully represented by Fig. 7. By turning the crank B, the blade is made to revolve, passing at every revolution by the mouth of the compressor H, of which Fig. 6, is a full illustration, presenting its cutting edge so as to cut off an object thrust down through the compressor. I, in this figure is a sectional view of the yielding, and self-adjusting jaw, between which, and the rim of the compressor, the edge of the blade is made to draw. The relative positions, and mutual relations of the blade, and the compressor, and the jaw will be fully understood by looking at them in Fig. 4.

Fig. 1, represents a transverse section of the feed cutter, and shows the ends of two feeding rollers J and K, and the ends of several thin strips of metal, fixed in their surfaces. The dotted circles L and M, represent two thin rubber friction wheels employed to convey motion from the roller J, to the roller K, by their contact with each other, and with two other similar wheels fixed to the ends of the shafts of the rollers J, and K, respectively, and to cause said rollers to rotate in opposite directions— namely, toward each other, and downward, so that straw or other feed put into the hopper will be drawn between them and forced down through the compressor H, a transverse section of which is seen in this figure. This figure also gives transverse views of the hopper walls, into the curves of which the rollers partly retire.

The four parallel dot lines at K, in Fig. 2, are intended for a longitudinal view of the roller K, whose end appears in Fig. 1.

Fig. 3, is a section in perspective, and represents a portion of the horizontal driving shaft A, on which is fixed the eccentric N, which plays easily in its band, which latter after surrounding the eccentric nearly meets together beneath it and is secured to the arm O, which reaches downward a little way, and near its lower end has an oblong opening P, extending in the direction of its length. Clasping this part of the arm O, with its notched end, a right-angled lever Q, is supported on a pin which projects horizontally from an upright support R, and fits in a hole in the elbow of the lever in such a manner that the lever can rotate on it freely. Through the lips of the notched end that clasp the lower part of the arm O, passes a pin S; the pin passing also through the oblong opening P, and fastens the lever Q to the arm O. At the other end of the lever Q is fastened the curved arm T, which extends a little way to, and over the ratchet

wheel U, curving over it so that the upper part of its periphery lies in the concave side of the curve. From the lower end of this arm T, projects a claw V, which when the arm is drawn back is intended to catch in the teeth of the ratchet, and rotate it. Now the shaft on which this ratchet wheel is firmly fixed, is that on which the feeding roller J, revolves, so that when the driving shaft A, revolves, the eccentric N, working freely on its band, alternately lifts, and depresses the arm O, which acting upon the angled lever Q, which acting on the curved arm T, which by means of its claw V, rotates the ratchet wheel U, and so causes the roller J, which is on the same shaft to revolve which by means of a friction wheel on the other end of its shaft, opposite to the ratchet an illustration of which is seen at M, in Fig. 2, gives its motion to the intermediate wheel L, which gives its motion to the intermediate M, as seen in Fig. 1, which communicates its motion to another friction wheel on the shaft of the roller K as seen at M, in Fig. 2, and causes said roller K, to revolve in an opposite direction to roller J. Thus are the feeding rollers worked. By observing the manner of delivering the motion of the feeding rollers through the eccentric N, from the shaft A, it will appear that the eccentric causes the rollers to revolve with an intermittent action, the object of which is to have the rollers at rest while the blade is cutting off the feed; and to have them thrust the feed down through the compressor when the blade is not under it, but in some other part of its revolution. This regular alternation of the movement of the feeding rollers, and the revolution of the blade would require the wheels D, and E in Fig. 2, to be of equal diameter, but when the feed is to be cut very short, it will make no difference in what part of its revolution the blade may happen to be when the feed is being thrust down; in which case the blade may be made to revolve with a greater proportionate velocity to that of the rollers, in which case the wheel D, must be greater in circumference than the wheel E, as seen in Fig. 2 of the drawings. The oblong opening P, in the arm O, in conjunction with the pin S, which plays in it, and connects the arm O, and the lever Q, is designed in combination with the set screw W, to vary the amount of action which the feeding rollers receive through the eccentric. In this wise said pin S, being permitted to play freely in the opening P, decreases the amount of motion which the rollers receive according to the distance that it plays up and down the opening, because it governs the action of the lever Q. Now this distance may be made more or less by setting up, or setting down this screw W, which acts upon or against the pin S, and increases or diminishes the distance which the pin can play in the opening P, and thereby diminishes or increases the amount of action derived by the feeding rollers through the lever Q. Thus by turning the screw W, we can graduate the feed, so that the blade will cut it longer or shorter as may be desired.

Fig. 3, also shows the graduated standard X, and the hand lever Y, which lever has a short arm Z, beyond its fulcrum, which short arm is situated under the curved arm T, in such a manner that by depressing the handle of the lever Y, its short arm Z, lifts the curved arm T from the ratchet wheel, and instantly disconnects the feeding rollers from the power gear, and by elevating the lever Y, the rollers are instantly connected with the power gear; so that the feed may be stopped, or started by permitting or not permitting the claw V, to take hold of the teeth of the ratchet wheel U. Also by elevating or depressing the handle of the lever Y, more or less by means of the graduated standard into whose notches the lever Y, catches, the feed may be made more or less, that is to say longer or shorter accordingly to the number of teeth in the ratchet wheel that the claw V, passes over before catching, in its successive pulsations.

Fig. 7, represents a geometrical spiral curve edged blade, with a portion of its edge serrated, and a portion of it not serrated. Its eye is designed to receive the end of a shaft by which the blade is to be revolved. The blade revolving around a center will describe a circle, and an object being placed within this circle will in effect, and in fact be cut with a drawing cut owing to the curve of the edge of the blade being a geometrical spiral. These facts are fully elucidated in Fig. 4, where the blade is represented as passing the end of the compressor H, through which if an object protrude it is plain the blade will cut it with a drawing cut. The serrates on the edge of the blade are intended to facilitate the cutting of certain varieties of feed.

Fig. 4, shows the situation and nature of the self-adjusting jaw I. It is made of tough wood, and may be made of any desirable material. Its wide end is fixed firmly to the machine—upon its bottom—an inch more or less from the cavity of the compressor; from this point it reaches to, and partly around the cavity of the compressor, with a curve corresponding to that of the compressor and flush with the inside of the same, fitting close to it. A chock is cut out of the jaw—near where it is attached to the bottom of the machine—leaving it so thin, that when the blade draws its edge between the compressor and the jaw, the latter springs away from the compressor, enabling the blade to pass,

when it readjusts itself again to the compressor. By these means the feed is supported on both sides of the blade while being cut.

What we claim is—

The arrangement of the blade G, the springing guard I, and the compressor H, when the latter is made of tapering form, as described for the purpose set forth.

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