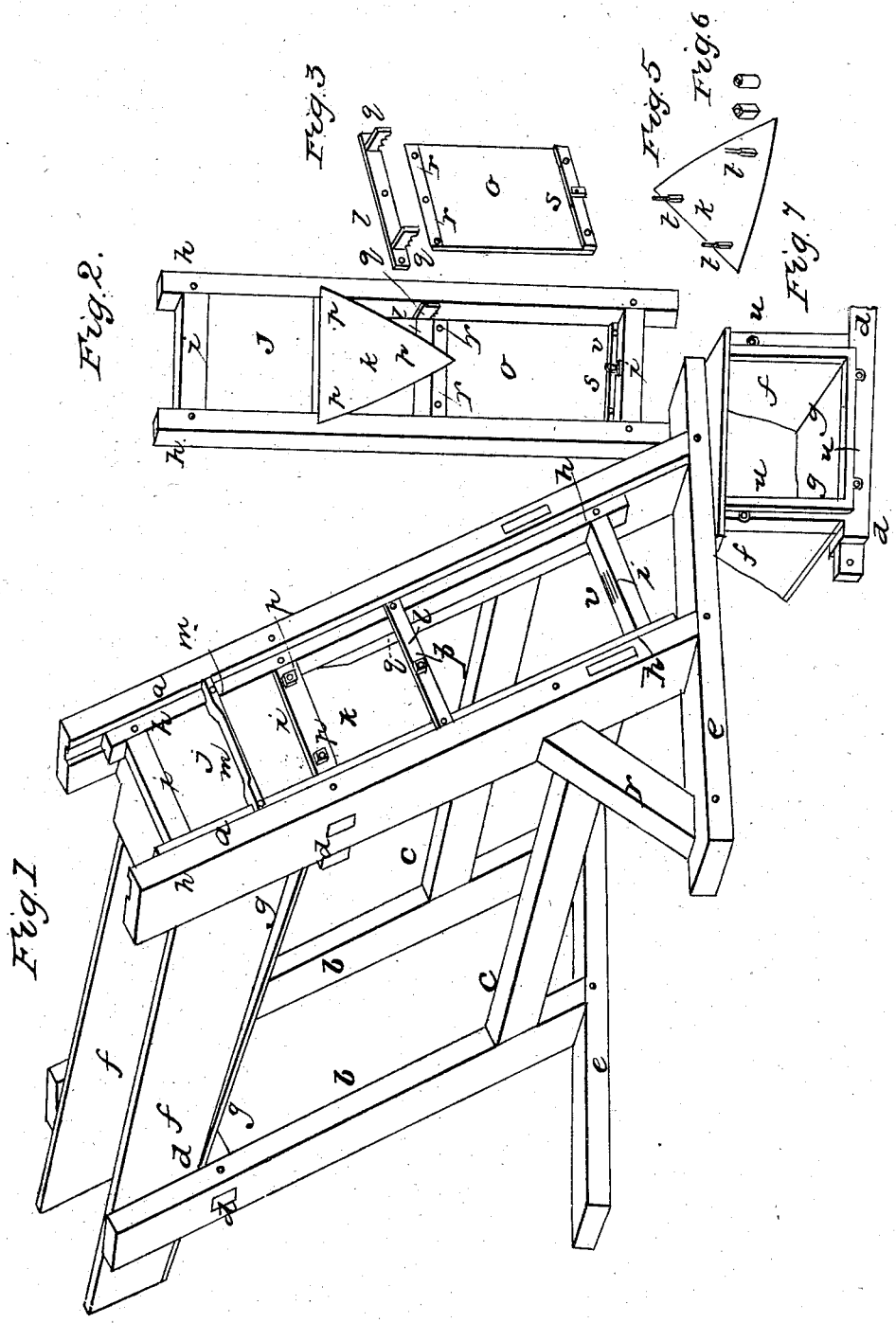
C. S. GAYLORD.

Straw Cutter.

No. 3,331. Patented Nov. 6, 1843.



UNITED STATES PATENT OFFICE.

CHS. S. GAYLORD, OF GAYLORDS BRIDGE, CONNECTICUT.

STRAW-CUTTER.

Specification of Letters Patent No. 3,331, dated November 6, 1843.

To all whom it may concern:

Be it known that I, CHARLES S. GAYLORD, of Gaylords Bridge, in the town of New Milford, county of Litchfield, and State of Connecticut, have invented a new and useful Improvement on Machines for Cutting Hay, Straw and Stalks; and I do hereby declare that the following is a full and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a perspective view; Fig. 2, a front view of the gate or frame in which the knife is fastened; Fig. 3, an iron which is secured to the back of the gate aforesaid; Fig. 4, a board belonging in said gate called a gage board; Fig. 5, the knife with the screw bolts which hold or fasten it to the gate; Fig. 6, the ferrule which surrounds the lower one of the said screw bolts; Fig. 7, a view of the mouth of the box, including the iron against which the knife cuts.

The aforesaid machine is composed of four posts, two girts, two ties, two foot pieces, three boards for a box, a knife, and a gate, (so called) to which the knife is attached, three screw bolts and other irons with which to confine the knife, a gage board to regulate the length of feed or substance being cut, and irons to confine said gage board in the gate.

See the drawings, Fig. 1, *a*, *a*, the head posts; *b*, *b*, the foot posts; *c*, *c*, the girts which connect the head and foot posts; *d*, the tie which couples the head posts; *d*, *d*, the tie which couples the foot posts; *e*, *e*, the feet of the machine; *f*, *f*, the boards which form the sides of the box; *g*, *g*, the bottom board of the box; *h*, *h*, the uprights or stiles of the gate; *i*, *i*, *i*, the ties of the gate; *j*, the panel of the gate; *k*, the knife; *l*, the iron which confines the knife at the point; *m*, the handle by which the gate is moved; *n*, a brace which supports the head posts.

Fig. 2 shows a front view of the gate or frame in which the knife is fastened; *h*, *h*, the stiles or uprights of the gate; *i*, *i*, the ties of the gate; *j*, the panel of the gate; *k*, the knife; *l*, the iron which confines the knife at the point; *o*, the gage board which regulates the feed; *p*, *p*, *p*, the screw bolts which confine the knife; *q*, the iron which confines the gage board at the upper end; *r*, *r*, iron which is riveted on to the gage board; *s*, a button which confines the lower end of gage board.

Fig. 3, an iron which confines the knife at its point and also the gage board at its upper end *l* the main body of the iron *q*, *q* the legs of said iron with notches.

Fig. 4, a separate view of the gage board. *o* the main board. *r*, *r* an iron riveted on to its upper end. *s* a button which confines its lower end.

Fig. 5, a separate view of the knife with its screw bolts. *k* the knife. *t*, *t*, *t* the screw bolts.

Fig. 6, the ferrule which surrounds the lower screw bolt.

Fig. 7, the mouth of the box and iron which confines the feed or substances being cut. *f*, *f*, the side boards of the box. *g*, *g* the bottom board. *d*, *d* the tie which couples the head posts. *u*, *u*, *u* the iron which confines the feed and protects the mouth of the box.

The aforesaid machine is made of strong hard timber such as oak, ash, or maple. The head-posts *a*, *a*, Fig. 1, are four inches wide and one and three fourths thick. The inner post is three ft. and the outer one three ft. and a half long. These are framed together with a tie and foot piece so as to stand nine inches and three fourths apart. The outer post being six inches longer than the inner one—an inclination is thereby given to the machine of about forty degrees more or less. The tie *d*, is four inches wide and one and three fourths inches thick; and is framed into the posts twelve inches from the top; and falls back from the face of the posts two and one quarter inches. The foot piece *e*, Fig. 1, for these posts is three feet long, four inches wide, and one and three fourths thick; and is framed on to the lower end of the posts in such a way as to allow it to project most on that side toward which the posts incline; so that the weight of the machine shall stand over the center of the foot piece. The head posts are channeled or grooved so as to admit a frame, or gate; to which the knife is attached, to slide easily, up and down between them. These grooves are cut three fourths of an inch from the face of the posts, and are one and one half inches wide and three eighths of an inch deep. The gate *h*, *h*, *h*, *h* is made thirty-three inches long and ten and a half inches wide and is composed of two upright pieces

h, *h*, *h*, *h*, three ties *i*, *i*, *i*, a panel *j*, and a gage board. The stiles of the gate *h*, *h*, *h*, *h*, are thirty-three inches long and one and a half, by one and a quarter inches square. The upper tie *i*, is one and a half inches thick by two and a half inches wide; and is framed into the gate three fourths of an inch from the top. The middle tie *i*, is one and a half inches thick by two and a half in. wide; and is framed into the stiles eight and one fourth in. from the top. Between the ties is a panel *j* five and a half in. wide which just fills the space and is kept in its place by tenoning the ends and inserting them in grooves in the stiles. On the back of this panel is attached a handle *m*, for the convenience of the operator in moving the gate. The lower tie *i*, is one and one half inches square and is framed into the stiles twenty-nine and a half inches from the top. The three ties *i i i* and panel *j* are each eight inches long between shoulders and each have tenons one half of an inch thick. The knife *k*, is made so that the outlines form nearly an equilateral triangle; or in other words it is a thin flat piece of metal about three eighths of an inch thick whose outline or edges forms nearly an equilateral triangle; and two of said edges are cutting edges. However experiment suggests the following deviation. Let the two lines which describe the cutting edges of the knife be nine inches long and the other line be eight inches long. Also let the two longest lines each curve outward one fourth of an inch, or thereabout between the points where they intersect each other; and where they intersect the shortest line. The two longest lines form or describe the cutting edges; and their junction forms the lower point of the knife which pierces the straw in or near the middle of the volume; and divides it so that each edge of the knife cuts about one half of the volume. The shortest line of the triangle aforesaid, forms the upper edge of the knife; which is not a cutting edge. The knife can be made of steel altogether; or of iron and steel conjoined. A suitable thickness is about three sixteenths of an inch; or one fourth of an inch. When complete the knife is a plate of metal about three sixteenths of an in. thick; of nearly a uniform thickness; and of the shape aforesaid; having its face-side ground to a level or flat surface and its back side beveled off, so as to form a suitable edge for cutting, straw, hay, and stalks. The knife is affixed to the middle tie of the gate by cutting, and screwing, it, into the tie, to the extent of its thickness; so that the knife will face with the tie; and also with the panel and other ties; and so that the point of the knife will stand equidistant from each upright of the gate. The knife is kept in its place by three screw bolts *p*, *p*, *p*, Fig. 1. The holes for these bolts are countersunk; so that the heads of the bolts, will face with the knife. The two upper bolts pass through the knife and middle tie and are confined by a nut on the backside of the tie. The lower bolt passes through the knife and a piece of iron screwed on the back side of the gate *l*, Figs. 1, 2, and 3. This iron *l*, is one inch wide, nine and a half long, and one fourth of an inch thick, with a hole in the middle for the lower bolt. It (the iron *l*,) has two projecting parts or legs; which rise at right angles with its inner side; three fourths of an inch from each end. The projecting parts or legs *q*, Figs. 1, 2 and 3, are for the purpose of holding the upper end of the gage board in the desired place. These legs have each three or four notches by means of which the gage board *o*, *o*, Figs. 2 and 4, may be confined at any desired distance from the knife; which distance determines the length of feed. The lower bolt passes through the knife and the iron *l*, aforesaid and is confined by a nut on the back of *l*.

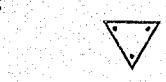
The space between the knife and the aforesaid iron is occupied by a ferrule or ring, Fig. 6, which surrounds the lower bolt and is just long enough to permit the point of the knife to stand even with the face of the gate, Fig. 2. This ferrule or ring may be round or square as in Fig. 6. The gage board *o*, *o*, Figs. 2 and 4, has a piece of strap iron riveted on to its upper end which fits into the notches of the legs *q*, *q*, *q*, Figs. 1, 2, and 3, of the iron *l*. This strap or iron *r*, *r*, Figs. 2 and 4 confines the upper end of the gage board while the lower end is confined by means of a button or slide *s*, *s* Figs. 2 and 4, which falls in to notches in the lower tie as at *v*, Figs. 1 and 2. These notches or grooves are corresponding with those in the iron above at *q*, *q*. The gage board aforementioned occupies the entire space superficially between the iron *l*, and the lower tie *i*, Figs. 1 and 2, and is used for the purpose of regulating the length of the feed or substances being cut. This is done by setting the board in one or other of the notches at *q*, *q*, and at *v*.

The remainder of the machine is not yet described is constituted of a box for holding the straw or other substances and an iron adapted to the mouth of the box along the side of which iron the knife slides and cuts. The box is composed of the posts, girts, tie, boards, and foot piece, before mentioned. The posts *b*, *b*, Fig. 1 are of the same length and thickness as those before described but are only two and a half inches wide. The foot piece *e*, is the same thickness and width as the posts and three feet long. The tie *d*, *d*, the same thickness and width and nine and three fourths in. long between shoulders, and is framed in seven in. from the top of the posts. The outer

post is six inches longer than the inner one so as to give the same inclination as the head posts have—viz about forty degrees more or less.

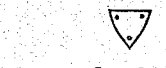
The girts which connect the head posts and foot posts are three feet long between shoulders *c*, *c*, and are two and a half inches wide and one and three fourths thick, and are framed in to the posts two feet and a half from the top. The boards which form the box for holding the straw are four feet long and five eighths of an inch thick. The bottom board *g*, *g*, Figs. 1 and 7 is nine and three fourths of an in. wide from end to end, and has one end on the tie to the head post and the other end on the tie to the foot post. The side boards *f*, *f*, are each six inches wide at one end and seven at the other, the widest end going forward. The boards are confined by screwing them on to the posts. Between the side boards and the head posts are blocks of wood about one and three eighths of an inch thick so as to contract the mouth of the box. The mouth of the box, Fig. 7, is about seven inches wide and six and a half high. Across the ends of the side boards *f*, *f*, Fig. 1 and over the mouth of the box is a board *w* Fig. 1 six or eight inches wide and set inclining downward toward the knife a little for the purpose of compressing the straw as it passes into to the mouth of the box, and also; of guarding the hand of the operator from the knife. On to the tie *d*, Fig. 7 which connects the head posts, and on to the blocks which are between the ends of the side boards and head posts is fastened the iron *u*, *u*, *u* Fig. 7 by means of screws. This iron secures the mouth of the box from friction and confines the straw or other substances; and forms a durable even surface for the face of the knife to slide against. This iron is so shaped as to cover the ends of the side boards *f*, *f*, Fig. 7 and the end of the bottom board *g*, *g*. It may be about three fourths of an inch wide and one fourth thick. The outer edges are thinner than the inner ones which gives a bevel and enables the builder to face it up to the knife with little labor. When the machine is set up this iron is so fastened that the knife plays as near as possible to it; without touching. This iron, and the iron before described, on the back of the gate may be of cast metal.

It is not absolutely necessary that the machine should be of the precise dimensions before specified; but these dimensions, are found to accord with the strength, and length of limb of men in general. Nor is it absolutely necessary that the knife should be just the shape described, but its outlines may describe precisely an equilateral triangle thus:



or they may describe an acute angled isosceles triangle thus:

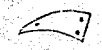
or they may be lancet shaped thus:



The knife may also be made for the purpose of saving a little in the expense with two diverging parts or legs having their outlines similar to those just described,

Examples.

and having their centers filled with wood. It is not absolutely necessary that the knife on its face be ground to a true level surface; but may be left so that its face, would be in respect to its shape, a segment of a large circle; or slightly oval; either. The posts of the machine may be also inclined more or less as the proprietor may desire. This inclination is made so as to accord with the natural movements of the operator's arm. A gate is not necessary to put the knife aforesaid in motion but it may be attached to a wheel either perpendicular or horizontal. If attached to a wheel it would be advisable to make one edge of the knife convex and the other concave and yet maintain the shape in some measure before described, thus:



I do not claim to be the inventor of the machine used for cutting hay straw and stalks, but what I claim as my invention in this machine, and desire to secure by Letters Patent is—

The form of the knife herein described as applied to the purpose of cutting hay straw and stalks, it being so shaped as to divide their volume and their resistance when cut, by presenting, and securing, for these purposes; the action of two cutting edges at the same time.

CHARLES S. GAYLORD.

Witnesses:

ABNER G. HUNGERFORD,

A. D. SMITH.