W. J. DUVALL.

Straw Cutter.

No. 665. Patented March 28, 1838.

Fig. 1.

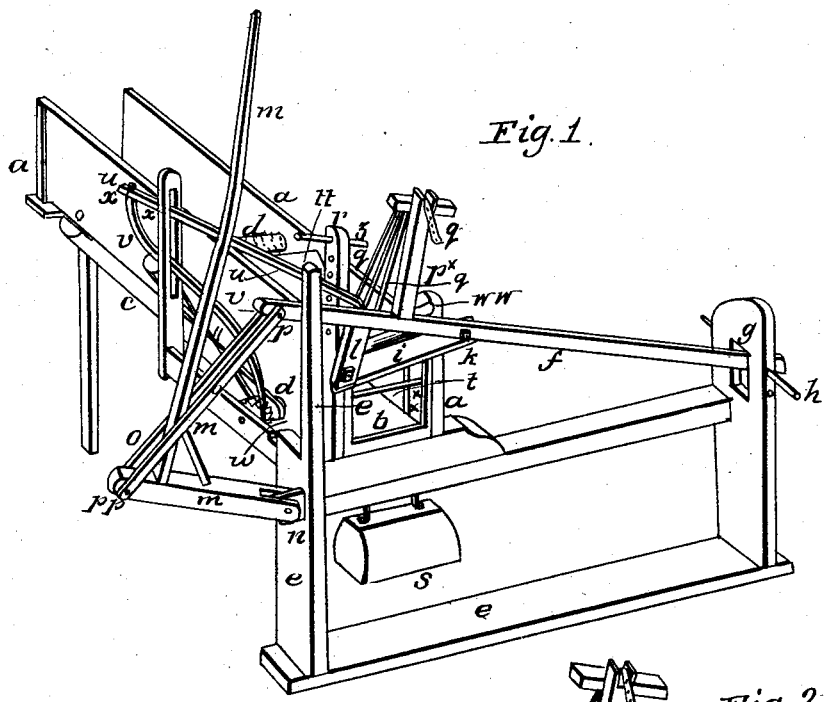


Fig. 2.

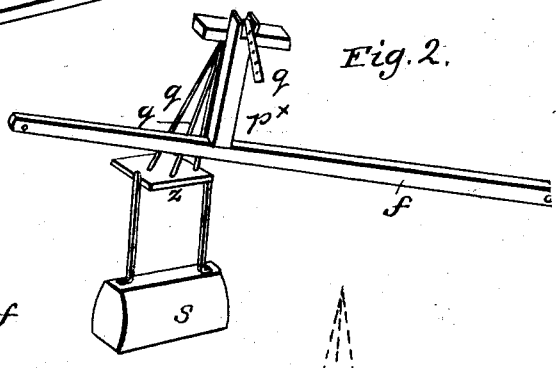


Fig. 3.

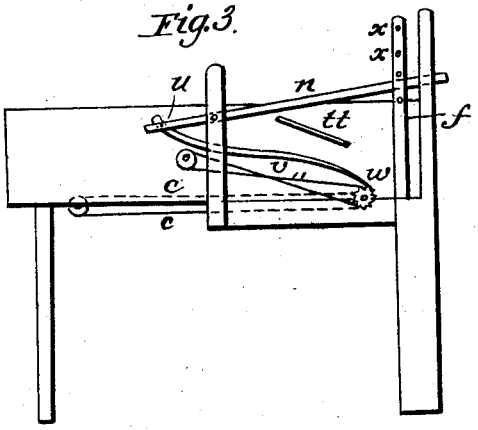
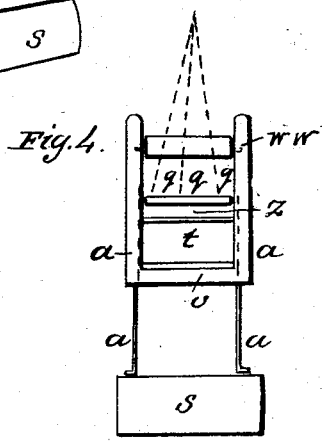


Fig. 4.



UNITED STATES PATENT OFFICE.

WM. J. DUVALL, OF BALTIMORE, MARYLAND.

STRAW-CUTTER.

Specification of Letters Patent No. 665, dated March 28, 1838.

To all whom it may concern:

Be it known that I, WILLIAM J. DUVALL, of the city of Baltimore and State of Maryland, have invented a new and useful Improvement on Straw-Cutters for Cutting all kinds of Forage Whether Coarse or Fine, and I do hereby declare that the following is a full and exact description.

I adopt the common form of the straw-box, as seen at *a*, *a*, *a*, in the drawing; the steel share *b is* also of the usual form; the feed apron *c*, and the upper and lower feed rollers *d*, *d*, are also the common form; *e*, *e*, *e*, *e*, shows the form of the front part of the frame; *f*, shows the beam which plays in the slot *g*, by the bolt *h*. On this beam *f*, I hang the knife *i*, one end being bolted to the beam at *k;* the other end to the projection *l*, by another bolt and nut, there being a vertical slot in each end of the knife, so as to lower it down as the edge wears away. *m*, *m*, *m*, shows the compound lever in connection with the knife beam *f*, the fulcrum of the lever is at the projection *n*, on the upright piece *e*, and the sling pieces *o*, *o*, of the lever are connected to the knife beam by a bolt at *p*. This kind of lever power to move the knives not only admits of sufficient motion to the knife to raise it up above the straw but has almost infinite power at the end of the stroke when the power is most required. For holding down the straw, I use the apparatus represented in Figure 2 where to the beam *f*, I attach the upright *p*, from which by the straps *q*, *q*, *q*, I suspend the press board L, which presses on the straw in the box by means of the iron weight *s*, as also seen in Fig. 1 the weight answering the double purpose to press the straw down and hold it firmly for the knife, and to aid the lever in the stroke of the knife. Below the knife, as it now stands, or across the upper part of the front of the box is a rod of iron as at *t*, to prevent the straw from reacting too high upward.

n, *n*, shows a rod or beam which moves the feeding hand *v*, *v*, which *v*, *v*, pushes the ratchet *w*, of the lower feed roller. The upward motion of the knife beam raises the forward end of the beam *n*, and by consequence of the joints or bolts *x*, *x* the hand pushes the ratchet wheel *w*, and by means of the pin *z*, in one or other of the holes up and down in the upright marked &, the hand has more or less play to cause the greater or less feed.

11, is a belt to gear and turn the upper and lower feed rollers, by means of the ratchet which is on the end of the lower feed rollers. The lever, as here represented is for hand power, but machine power may be applied by means of a rod or pitman attached at the bolt *p*, *p*.

Fig. 3 represents a side view, in which the part of the compound lever represented by *m*, *m*, and *o*, *o*, are ommitted. *u*, *u*, is the rod or lever, and *v*, is the feeding hand in Fig. 1 which moves the ratchet *w*, on the lower feed roller. *c*, *c*, is the apron as in Fig. 1.

f, is end of knife which raises the feeding beam *u*, *u*, the holes *x x*, &c. are the holes to receive the pin *z*, in Fig. 1 to regulate the length of the feed, for if the beam *n*, does not raise high, the hand *v*, cannot move the hand far.

11, is the belt gearing together the feed rollers. *t*, *t*, represents an inclined board, as also seen at *t*, *t*, Fig. 1, to regulate or guide the fore end of the straw as it moves up to the press board.

Fig. 4 shows front end of box. L is the press board. *q*, *q*, *q*, straps, &c., as in Fig. 2. *a*, *a*, and *a*, *a*, rods connecting the upright *s* to the pressboard—the rods at the dotted lines work in grooves in the inside of the box, as at *x*, *x*, in Fig. 1.

t, is the cross piece to prevent the straw from reacting too high upward for the knife, as represented at *t*, Fig. 1.

v, is the steel or share as at *v*. Fig. 1, *w*, *w*, friction rollers which keeps the knife up to the steel.

What I claim as my invention and desire to secure by Letters Patent is—

The combination of the following parts and their combination with the parts of the machine with which they are connected in the manner herein described, viz. the compound lever, consisting of the pieces *f*, *m*, *m*, and *o*, *o*, the pressing apparatus and the method of working and regulating the feeding hand.

WILLIAM J. DUVALL.

Witnesses:

THOMAS W. BOND,

ALFRED DUVALL.