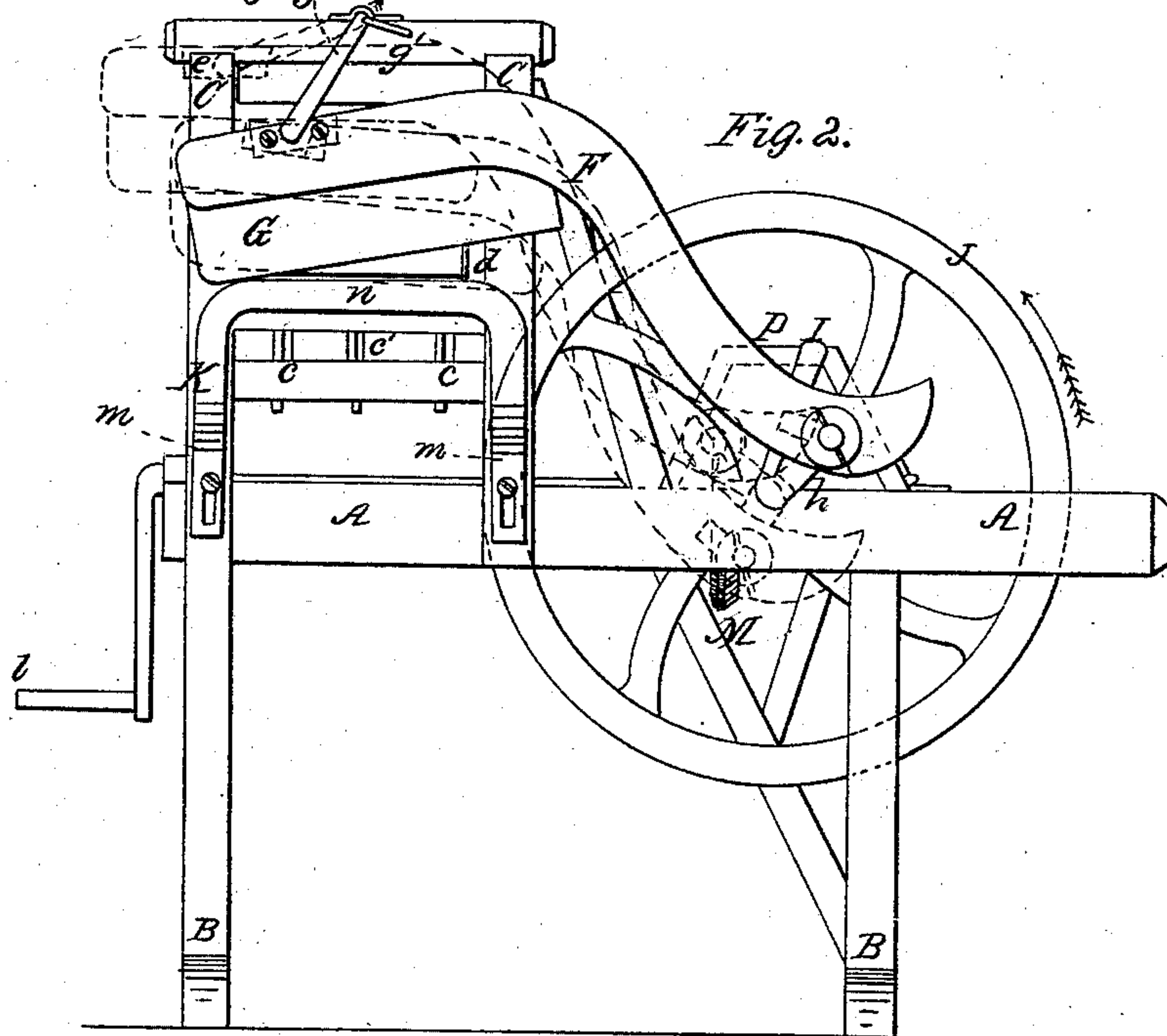
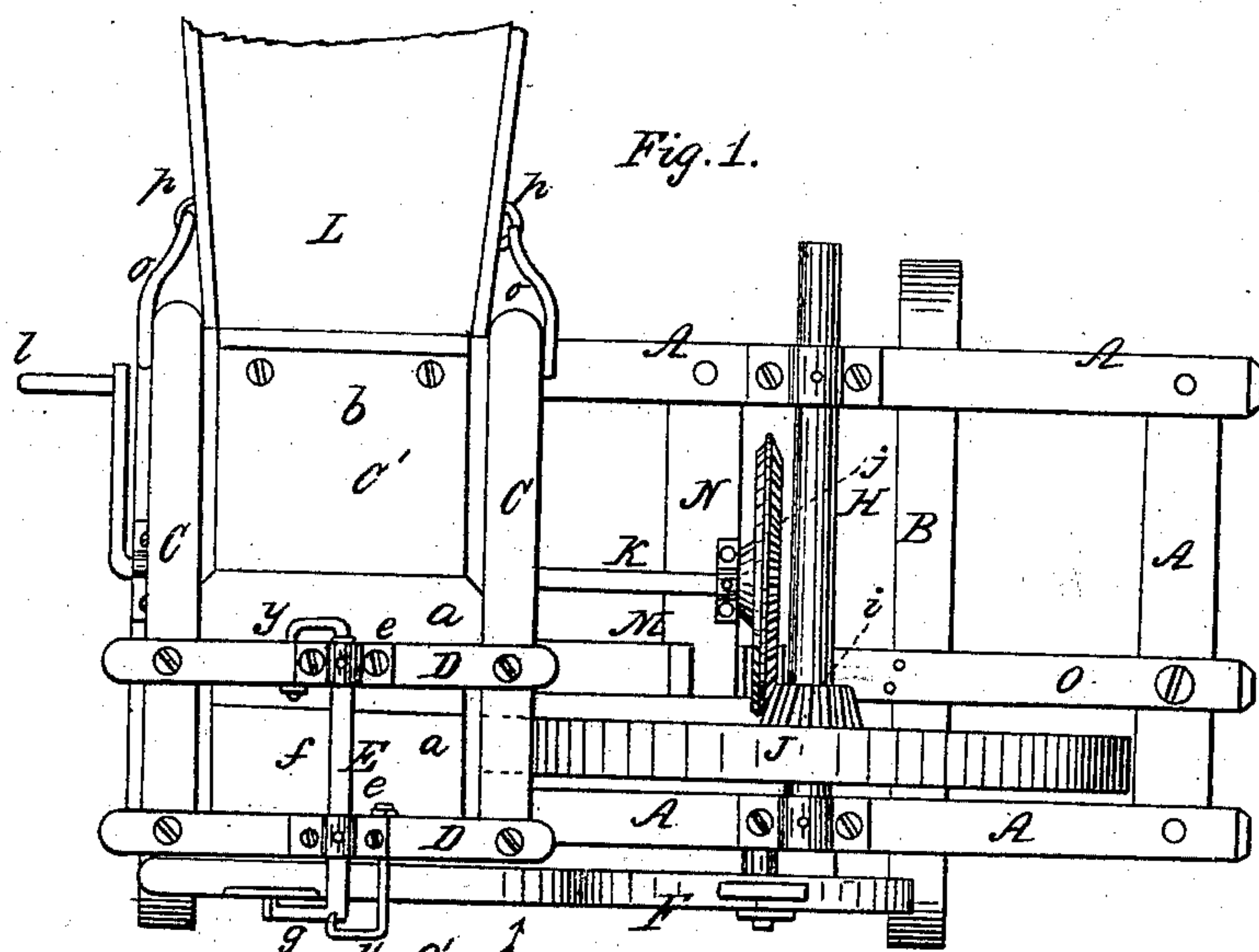


Straw Cutter.

Patented Aug. 27, 1861.



Witnesses:

Mr. Yorke at Lee
Randolph Boyle &

Inventor:

Inventor:
J. R. Hawkins
By his attorney
Thos. H. Dodge

UNITED STATES PATENT OFFICE.

HORACE R. HAWKINS, OF AKRON, OHIO.

STRAW-CUTTER.

Specification of Letters Patent No. 33,147, dated August 27, 1861.

To all whom it may concern:

Be it known that I, HORACE R. HAWKINS, of Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Straw-Cutters; 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 part of this specification, and in which—

Figure 1 represents a plan or top view of a machine with my said improvements applied thereto, a part of the removable box being shown broken away, while the cover to the gearing is removed to show the position thereof. Fig. 2 represents a front view, looking in the direction of arrow 1, Fig. 1, the knife and knife lever being shown, in three of the positions which it is made to assume when in operation.

In the drawings, A, A, represents the main frame, which is supported by four legs, resting on cross pieces B.

From the top of one end of the frame, rises the feeding box frame C, C, within which is fitted a feeding box C', having its front end covered, as seen at *a*, while its rear end is left open as seen at *b*. The front and rear of the feed box frame, rests on adjusting screws or bolts which work in cross pieces, fastened to the frame C, bolts *c*, *c*, sustaining the front end of the box, while the bolt *c'*, sustains the rear end thereof. The adjusting bolts *c*, *c*, *c'*, have square heads by which they can be screwed down or up,—to the right or left—thus enabling the box C', to be adjusted to any desired height.

The mouth of box C', is provided with a metal or steel casing *d*, against which the cutting knife works.

Over the top of the closed part of the box C', passes two parallel cross pieces D, D, which rest on the top of frame C, to which they are securely fastened, at such a distance above the box C', as never to be in the way of the proper adjustment of said box. On said cross pieces D, D, are placed the boxes or bearings *e*, *e*, in which the end *f*, of the right angled shaft E, turns or rocks, the other end *g*, extending down in front of the mouth or throat of box C', and is there pivoted or otherwise properly swiveled to the front end of the knife lever F, which sustains the knife G, which is fastened to its inner side, the top or back of the knife, abutting against a shoulder formed by cutting

away a portion of the lower inner face of said lever. The rear of the knife lever bends down as it extends back and is connected to a crank *h*, on the end of a shaft H, which is supported in bearings in the main frame, as indicated in the drawings. I, is a wedge by which the box or journal of the crank *h*, is tightened as it wears away.

Shaft H, is provided with a balance wheel J, and a bevel gear *i*, the latter working into a bevel gear *j*, on the rear of shaft *k*, the front of the latter being provided with a crank *l*.

To the front of the frame, is attached a bent supporting or guide piece K, the ends *m*, *m*, of which, are slotted out, so as to be capable of an up and down adjustment. The upper edge *n*, of this guide piece, is curved or bent in toward knife G, and is sustained just far enough from the mouth of box C', to allow the knife to work down between it and the front of said throat or mouth.

A removable box L, is used to hold the substance to be cut. This box may be of any desired length. It is attached to the rear of box C', by means of the hooks *o*, *o*, which are hinged or pivoted to the rear sides of the frame C. The rear top part of the bottom of box C', is recessed or cut out, so that the lower front part of box L, can be rested thereon with the top surface of its bottom, flush with the top surface of the bottom of box C', and where it is held by hooks *o*, *o*, taking into eyes *p*, *p*, in its sides, as indicated in the drawings.

M, is a brace piece which extends up, from one of the cross foot pieces B, to the upper part of frame C, thus answering the purpose of a brace to frame C, and also a support to the inner ends of pieces N, O. A cover P, is hinged to piece O, and the main frame, so that it can be turned back when it is desired, to examine the gearing, but down, as seen in Fig. 2, when the machine is in operation.

Everything being in readiness, and the material to be cut placed in the feeding box; the attendant takes hold of crank *l*, and turns shaft *k*, so as to move shaft H, in the direction of arrow 2, at the same time moving or pushing the material, out, through the throat or mouth of the box C', which is open, the knife being full raised, once at each revolution of shaft H, as indicated in blue lines Fig. 2. As crank *h*, draws the rear

end of lever F, down and back, the heel of the knife is first brought down upon the material with drawing cut, as indicated in red lines in Fig. 2, which represents the position of the knife just before crank *h*, has reached its lowest point. As soon as crank *h*, has passed the lowest point, and the heel of the knife has done its work, and begins to rise, the front of the knife begins to tip down, while at the same time, the entire knife is forced down, also by arm *g*, being drawn back, thus, completing the cut at the other end of the knife, when the position of the knife and parts will be, as indicated in black lines Fig. 2, which represents the knife just after the cut has been completed at the point. After this the knife is moved into the position shown in dotted lines.

By the above construction, not only is there a downward, drawing cut made, but the cut is divided, first the heel cuts, and then after it has done its part, it rises, and the point of the knife is thrown down, at the same time it is drawn back; when the cut is completed.

A careful examination of the combined operations, of the crank shaft E, which supports the front end of knife lever F, and crank *h*, which supports the rear end of said lever, will show the great power which is brought to bear on the knife, just at the time when the cut is being made, both at the heel and at the point.

By the use of the crank shaft, for supporting the front end of the knife lever, a more uniform cut is obtained since the long arm *f*, operates as a lever, to keep the end *g*, down in proper position, and consequently the knife, up, close, to the metal face.

An adjustment of shaft E, is provided for by means of the crank pivot bolts *y*, *y*. The conical points of these bolts work in

concave holes in shaft E, as indicated in dotted lines, Fig. 2, so that by unscrewing the nut on one end and screwing up the nut on the other, shaft E, can be moved either way, as desired, and there held. This feature is fully explained in a previous patent to me, and therefore need not be more particularly set forth in this connection.

The machine can be driven by belt or gearing, in which case, the proper connection could be made with the outer ends of either shaft H, or *k*, as would be most convenient.

Having described my improved machine for cutting straw, hay, corn stalks, and other similar substances, what I claim as my invention and desire to secure by Letters Patent, is

1. The right angled shaft E, for supporting the front end of the knife lever and knife.

2. Sustaining that end of the knife lever, to which the knife is attached, by a racking support arranged over or nearly over the center of the throat or mouth of the feed box, substantially as described.

3. The crooked knife lever, in combination with its operating crank and shaft arranged below the bottom of the mouth of the feed box.

4. The adjusting bolts or screws, or their equivalents, in combination with a vertically adjusting feed box, whereby the box can be quickly raised, to compensate for the wear of the knife.

In witness whereof I have hereunto subscribed my name.

HORACE R. HAWKINS.

In presence of—

J. W. STEPHENS,

H. W. HOWE.