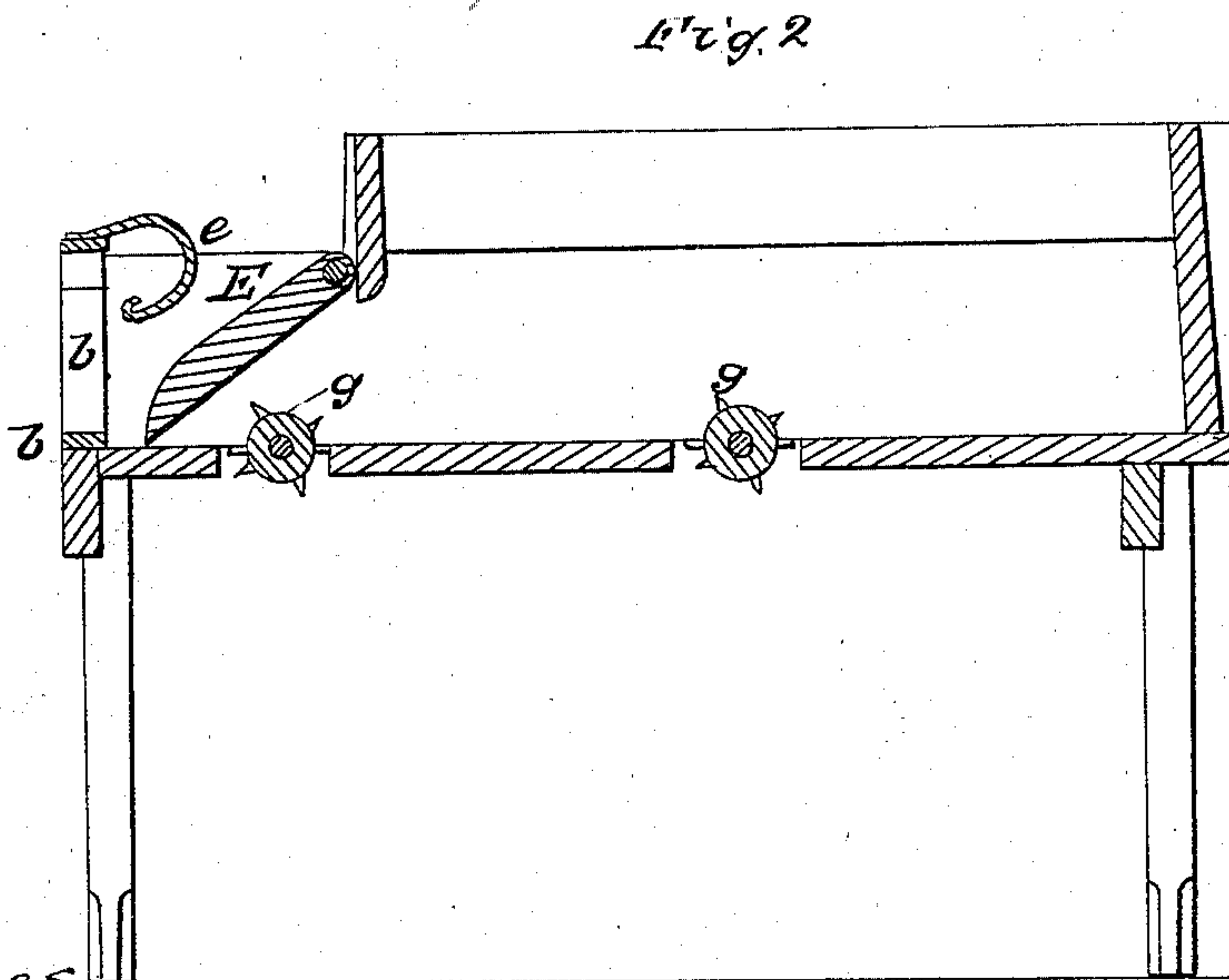
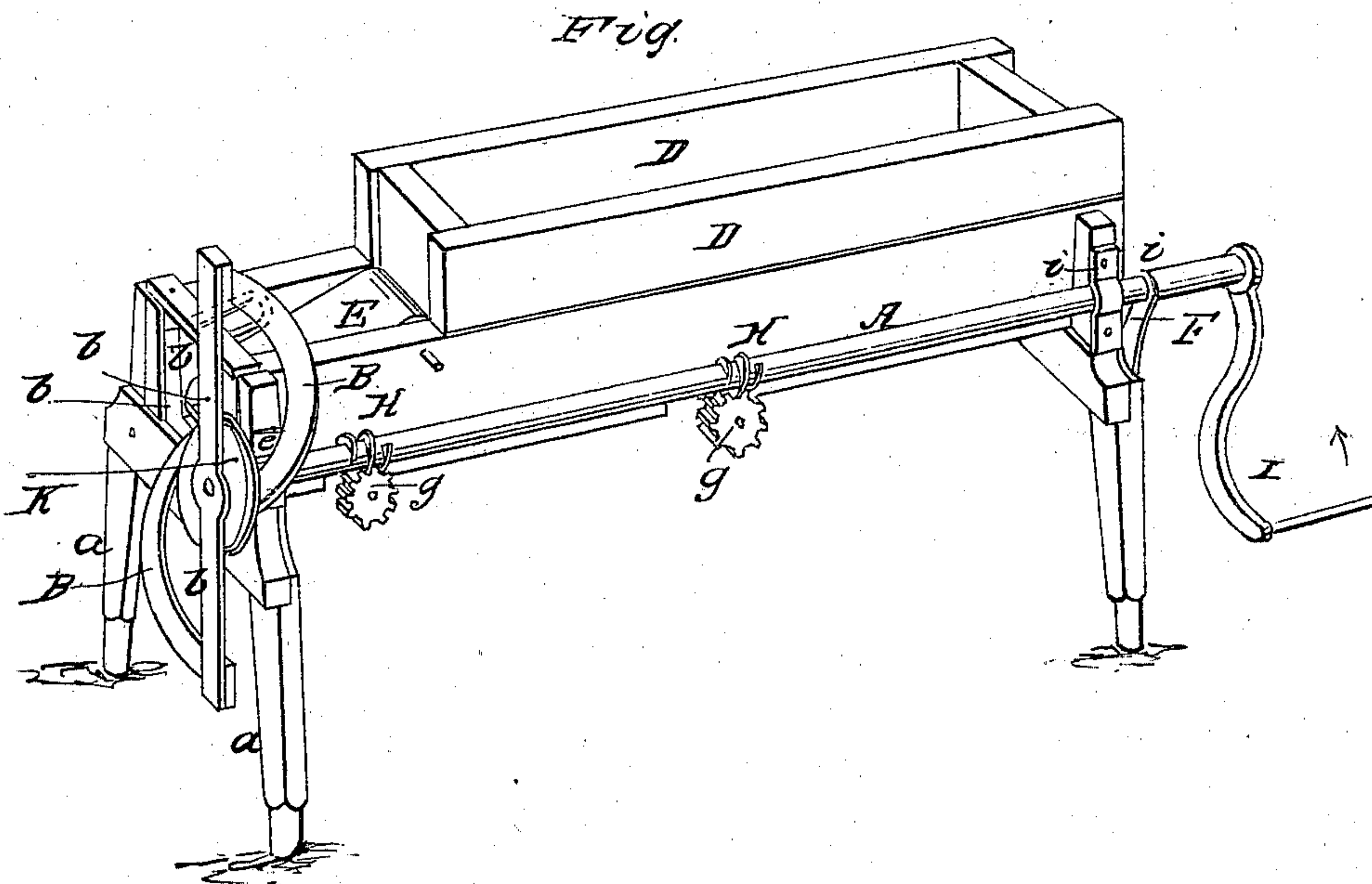


S. M. THOMPSON.

Straw Cutter.

No. 15,674.

Patented Sept. 2, 1856.



witnesses.

Thos. S. Walton
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Inventor

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UNITED STATES PATENT OFFICE.

SHELTON M. THOMPSON, OF GLASGOW, KENTUCKY.

STRAW-CUTTER.

Specification of Letters Patent No. 15,674, dated September 2, 1856.

To all whom it may concern:

Be it known that I, SHELTON M. THOMPSON, of Glasgow, in the county of Barren and State of Kentucky, have invented a new and useful Machine for Cutting Straw; and I do hereby declare that the following is a full, clear, 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 longitudinal section.

My invention consists mainly of an improved arrangement of the several parts of the cutting apparatus, whereby I have succeeded in combining the advantages of that class of machines in which the moving cutter is flexibly connected to the axle on which it rotates or vibrates and is held up to the fixed cutter by the yielding pressure of a spring with the advantages of that class in which the moving cutter is rigidly attached to the axle on which it rotates or vibrates, and is held up to the fixed cutter by the unyielding pressure of a set screw.

The machine as represented in the accompanying drawing, consists of an oblong rectangular cutting box D of the usual form, supported upon three or more legs (a). The mouth of the box is lined with a fixed steel blade or cutter b, secured to the bottom and sides of the box, and the bottom of the box is, behind the mouth, fitted with toothed feed rollers (g) whose journals turn in suitable bearings formed or secured to the lower edge of the sides of the box. The journals of the rollers on one side project beyond their bearings to receive pinions or worm-wheels G, which gear into and are turned by screws H upon the shaft A which carries the cutters and which is supported in bearings on the outside of the box on a level with or slightly above the bottom thereof.

On the inside of the box between the mouth and the front feed roller, a block E is placed across the box in an inclined position, its rear edge being highest. It is hinged at its upper edge so that when the straw is pushed under it from behind by the feed rollers, its front edge will be raised and by its weight tend to keep the straw pressed down compactly, in which condition it cuts much more easily than when it lies loosely in the box. To increase the pressure of the compressor in proportion to the quantity of

straw, a spring e is placed above this block which presses downward thereon with increasing force as the block rises; in this way the compression of the straw is duly regulated and made proportionate to its bulk, by the automatic operation of this compressing apparatus.

The rear end of the shaft A projects behind the box D and is fitted with a winch I by which it is turned. Upon the front end of the shaft A, a disk (K) is secured to which a cross head C is attached, whose arms project radially on opposite sides of the center, at right angles to the axis of the shaft A, and in a plane parallel with the front edge of the fixed knife at the mouth of the box. To the rear side of these arms and the disk K, two semi-circular blades or knives B are secured, in the position represented in the drawing; the concave edges of these knives are sharpened and stand in a vertical plane parallel to and passing through the cutting edge of the stationary knife in the mouth of the cutting box.

The shaft A, has end play in its bearings which permits it to be moved endwise to hold the cutters B nearer to or farther from the mouth of the cutting box as may be required. Since however it is generally necessary to hold the cutters B in close contact with the cutter b in the mouth of the box, a groove (i) is formed in the shaft A behind the rear bearing and the forked end of a curved spring F attached to the rear leg of the box, is fitted into this groove and tends constantly to press the shaft backward and of course with corresponding pressure to hold the revolving knives B in contact with the fixed knife b in the mouth of the box, but if any hard substance, such as a stone or bit of iron for example, which the knives could not sever should happen to get between them, the spring F would yield, the shaft A be drawn forward, the fixed and revolving knives separate far enough to allow the obstruction to pass out and then the spring would draw the shaft back, the revolving and fixed knives would resume their position of close contact, and the work would go on as if no obstacle to the cutting had intervened.

The firm and rigid manner in which the knives B are secured upon their shaft, prevents them from twisting and getting out of place and cutting into the fixed knife; as revolving knives not rigidly fixed and

pressed up by springs against the mouth of the box are liable to do.

From the length of the shaft A, the great distance between the front and rear bearings and the short radius of the revolving cutters B, it is obvious that however far the shaft is drawn forward or pressed back, the revolving cutters (B) must always, against any ordinary disturbing force, maintain their parallelism to the fixed cutter *b* in the mouth of the box, and this is a feature, not only new in yielding knife straw cutters, but is obviously of great practical importance because, imperfect cutting of the straw on the one hand or the destruction of the knives on the other is the certain result of the revolving knives being twisted or yielding on the shaft so that their edges are in planes oblique to that which the edges of the fixed knife occupy.

To operate the machine, a quantity of straw is placed in the box and the winch turned in the direction of the arrow, which turning the shaft A rotates the cutters B rapidly across the mouth of the box, each of these cutters, by reason of its position and curvature cutting with its outer extremity first at that side of the mouth of the box opposite to the shaft A, and gradually cutting across the mouth of the box, with a drawing cut, and gradually shortening radius, thus diminishing the leverage of the blade as its momentum is exhausted and thereby tending to equalize the resist-

ance. The revolving and fixed blades cross each other and the successive portions of their edges are brought into contact like the blades of shears. While the knives B are thus rotated, the screws H, on the shaft A turn the wheels G, to rotate the toothed rollers *g* which feed the straw forward under the compressor E, and out at the mouth of the box over the fixed knife *b*, the ends of the straw projecting over the edge of the fixed knife, being cut off every time one of the rotating knives B passes across the mouth of the box.

I am aware that the moving knives of straw cutters have been held up to the fixed knives thereof by means of springs, set screws and other devices. I therefore make no claim to an adjustable or a yielding knife, but

What I do claim and desire to secure by Letters Patent is,

The arrangement of the fixed knife *b*, the revolving knives B, the shaft A, and spring F as herein described, whereby the revolving cutters are held as rigidly parallel to the fixed cutter as if they were unyielding and are as free to yield for the passage of obstacles as those cutters which yield independently of the arms and shaft by which they are carried.

SHELTON M. THOMPSON.

Witnesses:

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EDMUND DAVIS.