

*W. H. Doane,
Making Staves.*

N^o 35,142.

Patented May 6, 1862.

Fig 2.

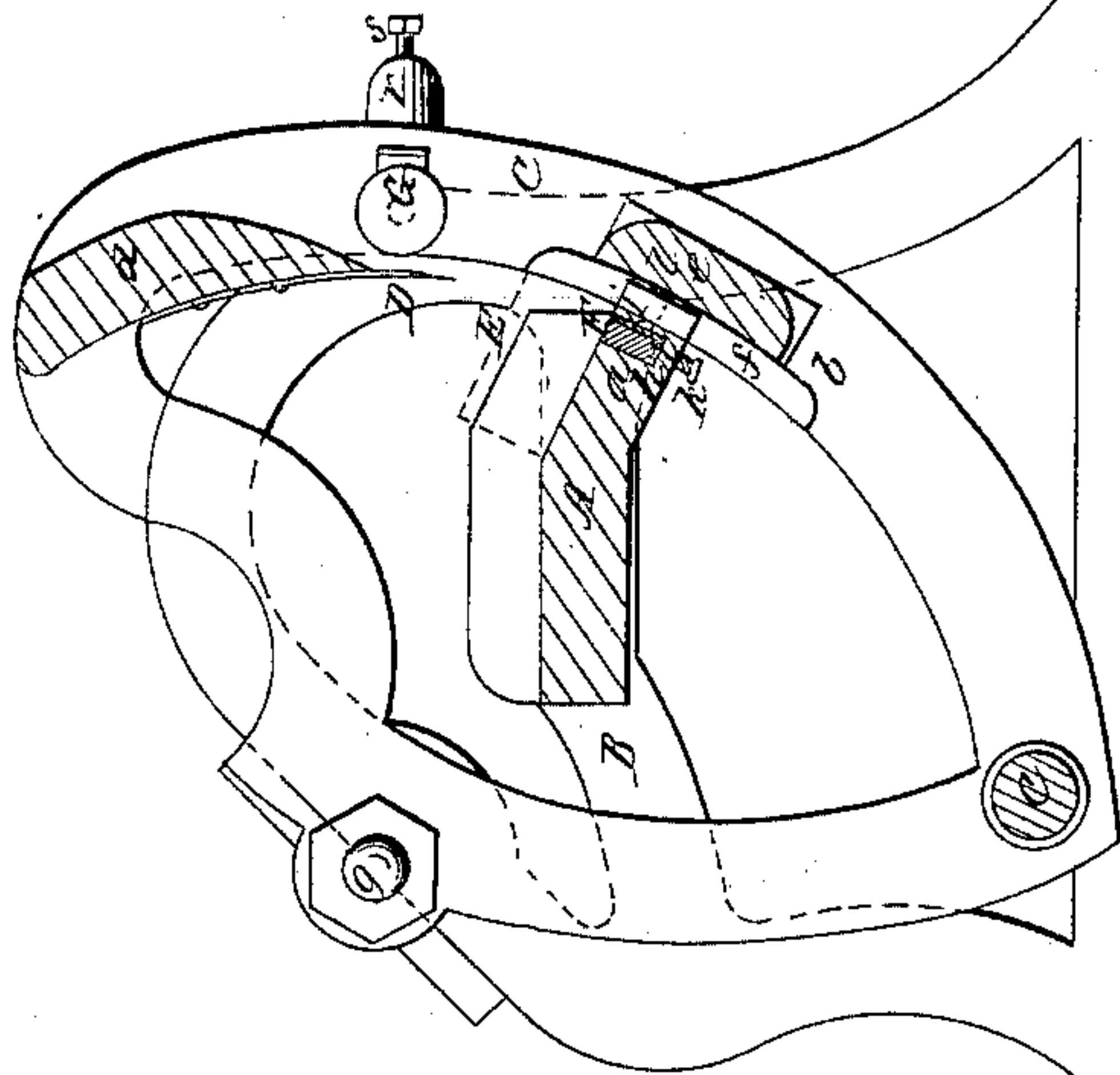


Fig 1.

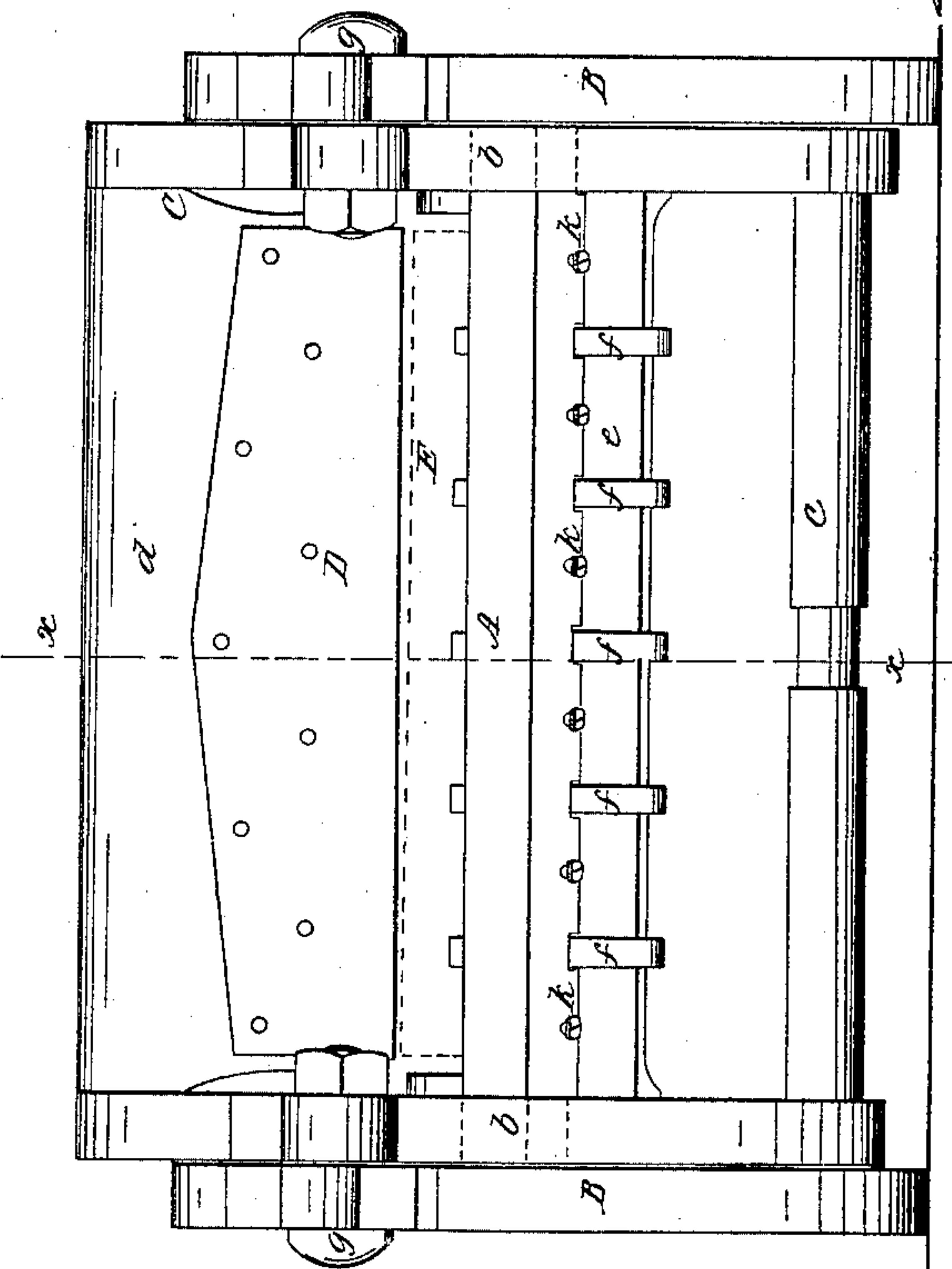
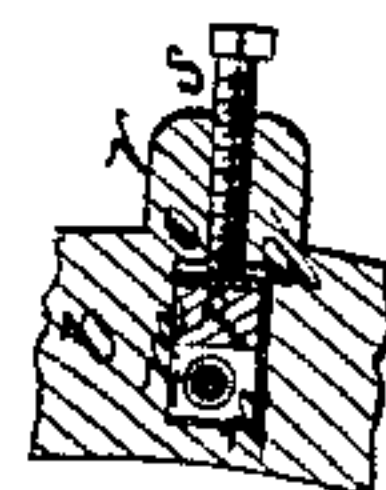


Fig 3.



*Witnesses:
J. W. Brown
R. S. Spurr*

*Inventor:
W. H. Doane
per J. M. Munn & Co
Attorneys*

UNITED STATES PATENT OFFICE.

W. H. DOANE, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN STAVE-MACHINES.

Specification forming part of Letters Patent No. 35,142, dated May 6, 1862.

To all whom it may concern:

Be it known that I, W. H. DOANE, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Stave-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a front view of my invention; Fig. 2, a transverse vertical section of same, taken in the line *xx*, Fig. 1; Fig. 3, a detached sectional view of one of the bearings of a roller pertaining to same.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain improvements in that class of stave-cutting machines in which a reciprocating knife is used and brought, at the termination of its cutting movement, against a bed-plate which sustains the bolt.

The object of the invention is to preserve the cutting-edge of the knife, and also to nicely graduate the pressure of a yielding roller which is attached to the knife-gate and in such a relative position with the knife as to insure the proper cutting of the staves from the bolt, all checking and splitting of the former being avoided.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a bed-piece, the front part, *a*, of which is somewhat inclined from a horizontal position, as shown clearly in Fig. 2. The bed-piece A is permanently secured between suitable supports, B B.

C represents a knife-gate, which is formed of two end pieces, *b b*, connected at their lower ends by a cross-bar, *c*, and connected at their upper ends by a cross-plate, *d*, which has a knife, D, secured to its front or inner surface. To the knife-gate C, just below the plate *d*, there is attached a cross-plate, *e*, having ribs or guides *f* at its inner or front side, said ribs or guides working in notches at the outer edge of the bed-piece, and forming bearing-surfaces for the bolt E. (Shown in red.) The end pieces, *b b*, of the knife-gate are attached to the supports B B by bolts *g g*, on which the knife-gate is allowed to swing

freely, the knife D moving in the arc of a circle of which the bolts *g* are the center.

In the outer or inclined part, *a*, of the bed-piece A there is made a groove or recess, *h*, of rectangular form and extending the whole length of the bed-piece. This groove or recess has a strip of india-rubber or other similar elastic substance, F, fitted within it, the substance F resting on a metal plate, *i*, at the bottom of the groove or recess *h*, and bearing against a metal plate, *j*, at one side of said recess, as shown clearly in Fig. 2. Through the bottom of the bed-piece A, and into its outer edge, screws *k l* pass, said screws bearing, respectively, against the plates *i j*.

The rubber or elastic substance F is in line with the path of the movement of the knife D, and said substance receives the edge of the knife as the latter completes its cut through the bolt E. In order that the elastic substance F may effectually resist the action of the knife D, the former is compressed in its groove or recess *h* by screwing up the screws *k l*. By this arrangement the elastic substance F may be made more or less compact, as may be desired, and the temperature of the weather, which affects india-rubber and other similar elastic gummy substances, and also the effect of wear to which the rubber or other substance is subjected, are fully compensated for. The substance F protects the edge of the knife.

To the knife-gate C, at its outer side and opposite the lower part of the knife D, there is secured a roller, G, which is parallel with the knife D, and has its journals *m* fitted in boxes *n*, which are placed in recesses *o* in the end pieces, *b b*, of the knife-gate. In each recess *o* a spring, *p*, of india-rubber or other similar elastic substance, is placed, and a metal plate, *q*, is placed in each recess at the outer side of the spring. Each end piece *b* has a projection, *r*, formed on or attached to it in line with the recesses *o*, and through each projection *r* a screw, *s*, passes, the inner ends of which bear against the plates *q*. By screwing up the screws *s*, it will be seen that the springs *p* will be compressed and the roller G rendered more or less yielding, as desired, and the variation in density of the rubber or other similar gummy substance may be compensated for.

The roller G, it may be proper to state, performs its usual function of guiding or sustaining the staves as they are cut from the bolt, and prevents the checking and splitting of the bolt. The knife-gate C may be operated by any convenient power.

I am aware that springs of various forms have before been applied to the bearings of rollers and that it is not new to apply a spring to the bearings of the roller employed in stave-cutting machines to guide and sustain the stave as it is cut from the bolt. In machines of this kind, however, it is of especial importance that the elasticity of the spring should be controlled within certain limits and should offer an increasing resistance to the roller in order to allow it the necessary play and at the same time effectually prevent the splitting off of the staves. It is also necessary to the full efficiency of the machine that the roller should be adjustable to accommodate staves of varying thickness.

I am not aware of any stave-cutting machine previous to mine in which it is possible to combine the features of adjustability and elasticity of the roller.

I do not desire to be understood as claiming, broadly, either the adjustability or the elasticity of the roller; but believe useful novelty to exist in the particular combination and arrangement of parts employed in connection with a reciprocating stave-cutter to render the roller adjustable, and at the same time elastic, with an increasing resistance.

I am also aware that in straw-cutters and other machines elastic substances have been employed as the support of the article to be cut.

In my machine the rubber F does not con-

stitute the support of the bolt. The outer edge and the main body of the latter rest upon rigid material, the rubber serving to prevent the splintering of the wood or the dulling of the knife without sustaining the main force of the cut. The adjustable plates *i* and *j* are therefore of especial importance to enable the rubber to be kept accurately on a level with the rigid surfaces on which the bolt rests. I do not, however, desire to be understood as claiming novelty in the various parts of my invention, excepting in the combination and for the specific purpose set forth.

I do not claim the roller G, nor the reciprocating knife D, acting on the bed-piece A, for these are old and well-known parts; but

I do claim as new and desire to secure by Letters Patent—

1. The combination of the india-rubber strip F, plates *i* and *j*, and screws *k* and *l*, for setting the same both vertically and horizontally when the said parts are so arranged, in connection with the bed-piece A *a*, and guides *f*, as to afford a rigid bearing for the bolt on both sides of the elastic strip, and the whole employed, in connection with the reciprocating knife D of a stave-cutting machine, in the manner and for the purposes set forth.

2. The combination of the india-rubber springs *p*, bearings or boxes *n*, and screws *s*, fitted in the projections *r* of the end pieces, *b*, of the knife-gate, all arranged and operating in connection with the roller G and knife D of a reciprocating stave-cutter, in the manner and for the purposes specified.

W. H. DOANE.

Witnesses:

P. H. WITT,
C. D. WOLF.