

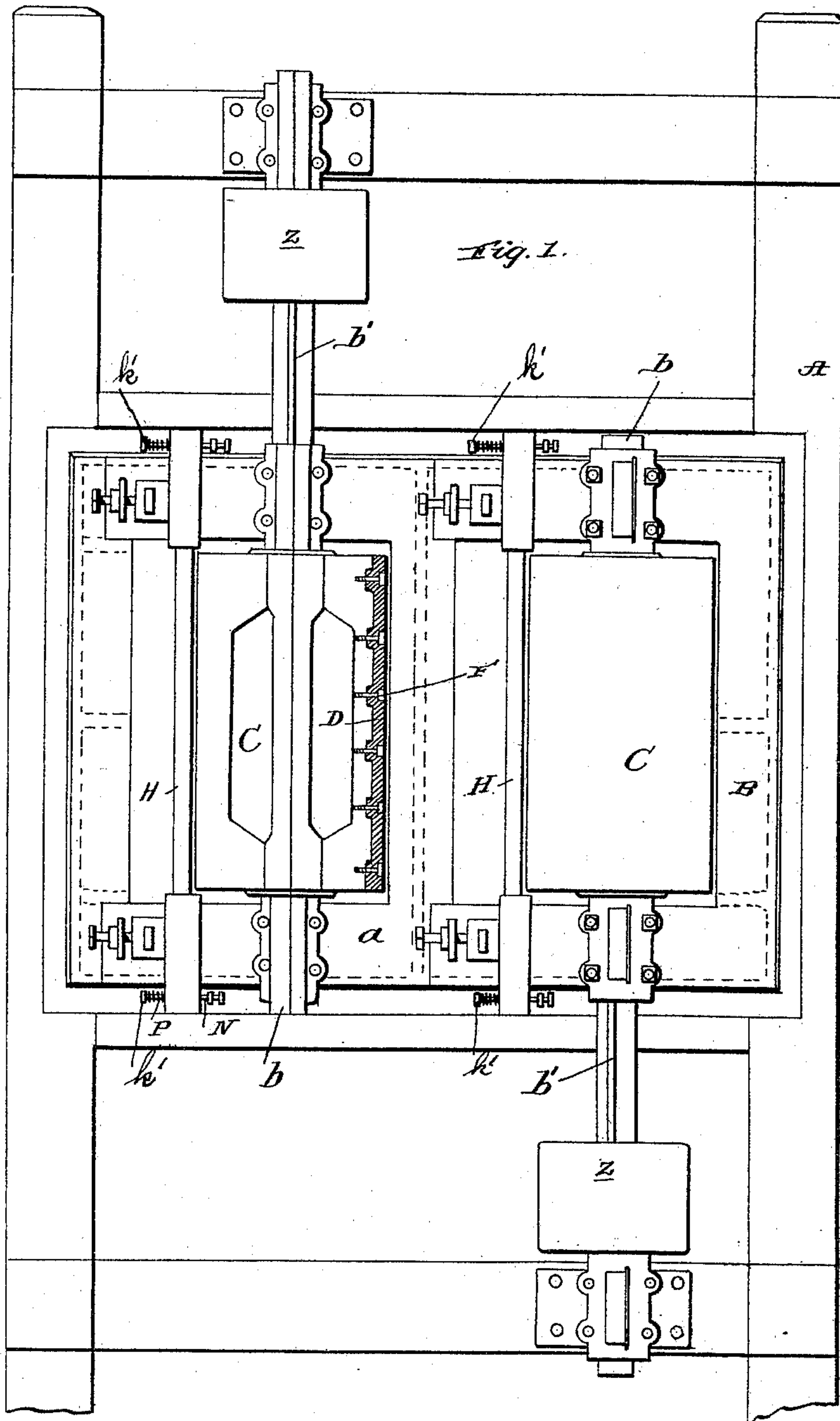
(No Model.)

2 Sheets—Sheet 1.

J. M. COOPER.
HOLLOW ROLL COMMINUTER.

No. 495,665.

Patented Apr. 18, 1893.



Witnesses:

C. A. Paeder

James Sheehy

Inventor

John M. Cooper.

By W. R. Stringfellow.

Attorney

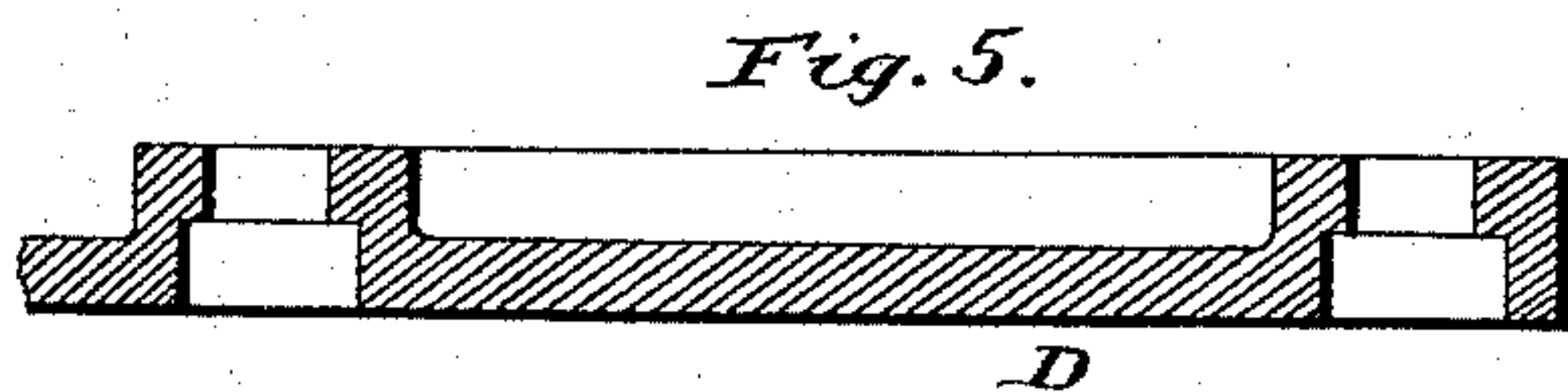
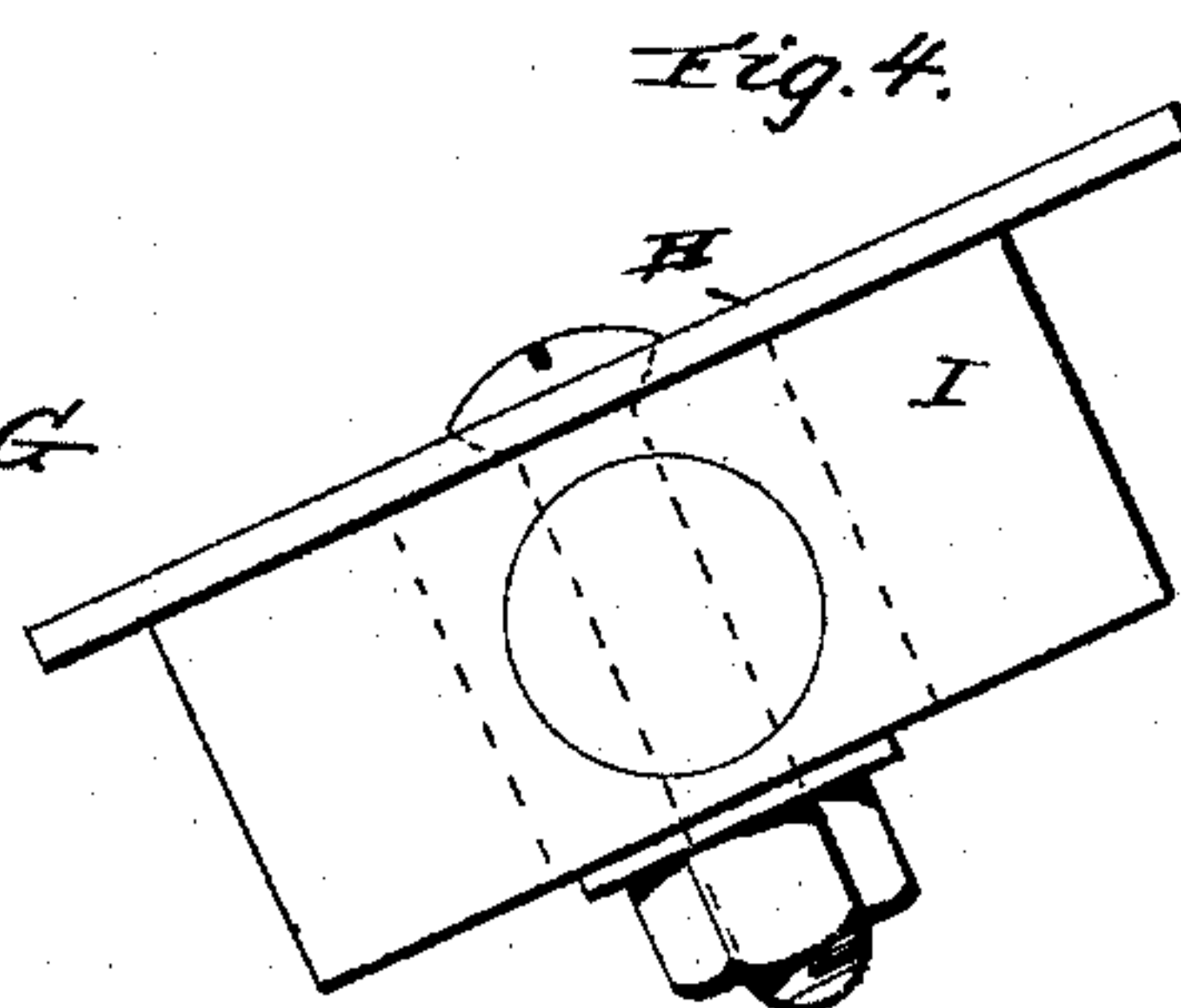
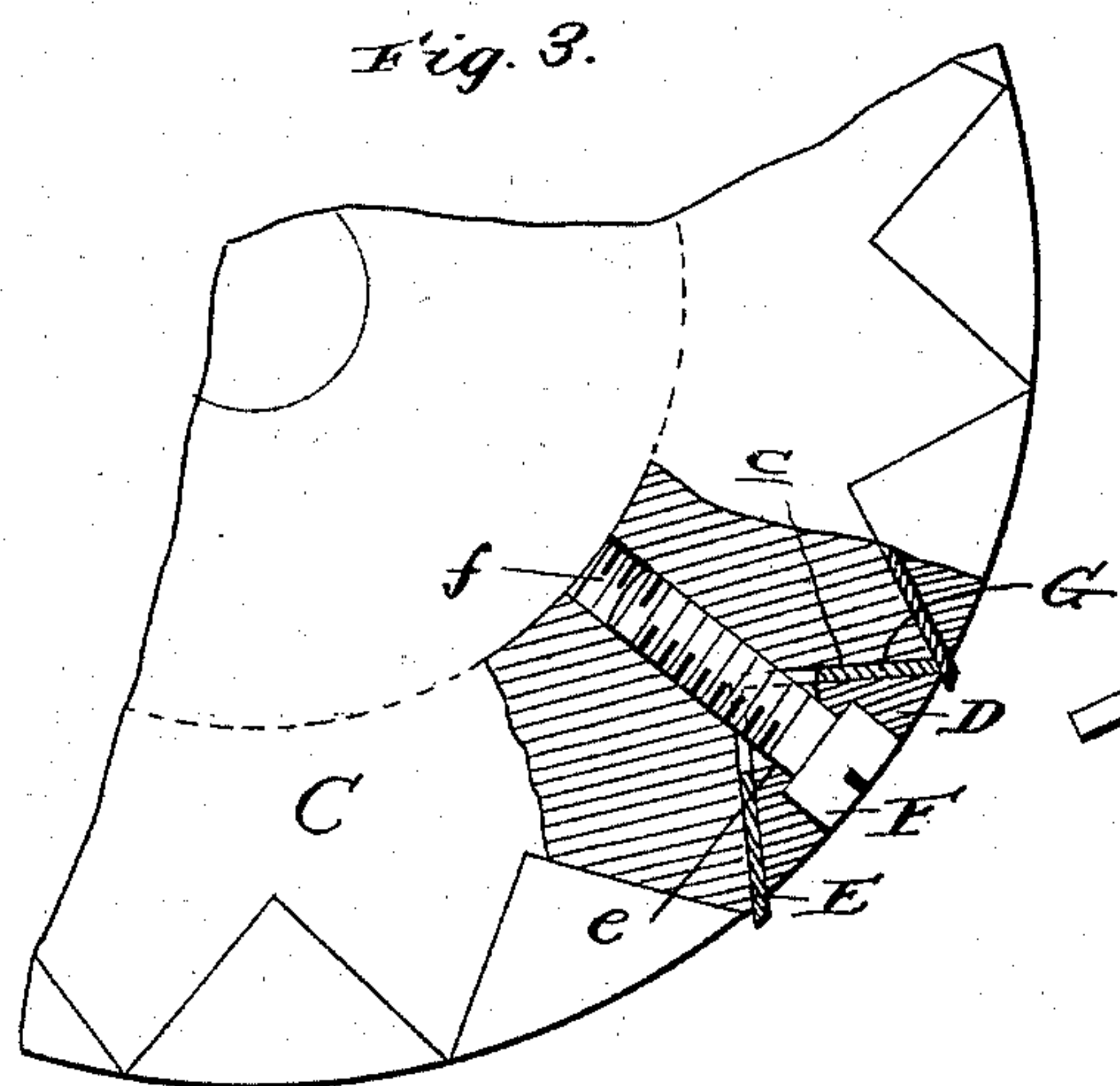
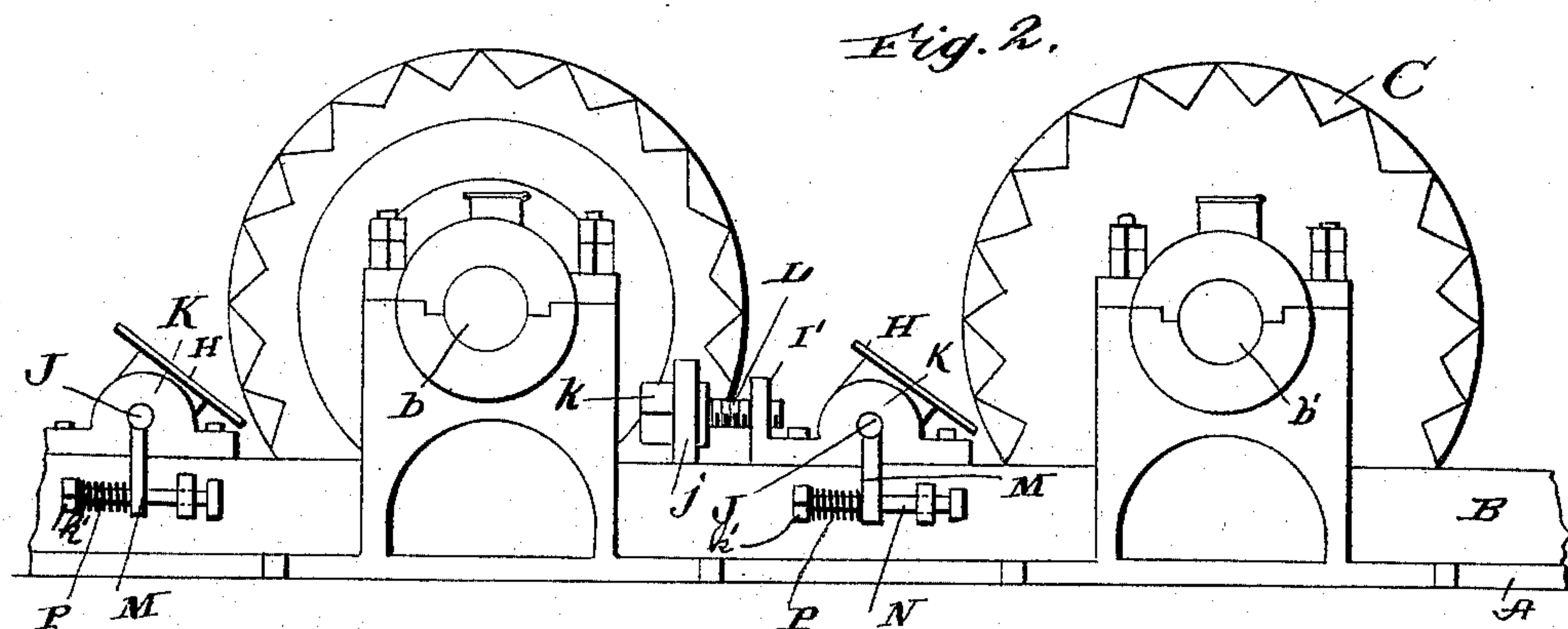
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UNITED STATES PATENT OFFICE.

JOHN M. COOPER, OF NEW ORLEANS, LOUISIANA.

HOLLOW-ROLL COMMINUTER.

SPECIFICATION forming part of Letters Patent No. 495,665, dated April 18, 1893.

Application filed April 18, 1892. Serial No. 429,640. (No model.)

To all whom it may concern:

Be it known that I, JOHN MILTON COOPER, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Hollow-Roll Comminuters; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to improvements in comminuters designed more especially for cutting cane, and the like, and it consists in the peculiar construction, certain novel combinations, and the adaptation of parts hereinafter described and particularly pointed out in the claims appended.

In the accompanying drawings: Figure 1, is a plan view, partly in section of a comminuter embodying my invention. Fig. 2, is an end elevation of the same. Fig. 3, is an enlarged, detail, end elevation, partly in section of one of the drums or rolls. Fig. 4, is an end elevation of the dead knife and the block supporting the same, and Fig. 5, is a detail perspective view of one of the keeper bars.

In the said drawings, similar letters designate corresponding parts throughout the several views, referring to which:

A, indicates the base or bed frame of my improved machine, which is preferably formed from wood, and B, indicates the bearing frame which is preferably of a general rectangular form and is secured to the base or bed frame A, in any ordinary or approved manner. Journaled in suitable bearings rising from the side bars *a*, of the frame B, are the trunnions *b*, *b'*, of the comminuter rolls C, of which two are preferably employed in each machine. These rolls C, which may be employed in concert or alternately as desirable, are made hollow as better shown in Fig. 1, of the drawings so as to render them light. Formed at suitable intervals in the outer surface or periphery of each roll C, and extending from end to end thereof, are grooves *c*, which are of a truncated V-form in cross section, and are designed to seat the keeper bars D, which are also of a truncated V-form in cross section and are adapted to secure the comminuting knives E, to the rolls.

The keeper bars D, as better shown in Fig.

3, of the drawings, are provided at intervals in their length with apertures *e*, for the reception of the threaded connecting bolts F, which take through said apertures, and into the radially disposed threaded bores *f*, formed in the rolls C, and serve to securely hold the keeper bars in their seats.

In order to lessen the weight of the keeper bars D, and thereby reduce the strain upon the bolts F, when the machine is running at a high speed, I recess the inner sides of the said bars as better shown in Fig. 5, of the drawings.

As better shown in Fig. 3, of the drawings, the inner walls of the grooves *c*, form a solid base for the knives E, which are securely held between one of the sides of the bars D, and the contiguous wall of the grooves *c*, whereby it will be seen that the knives may be subjected to great strain without being displaced, which is a highly important desideratum.

To further brace and strengthen the knives E, which have their cutting edges extended beyond the peripheries of the rolls as shown, I provide the bearing plates G, which are secured in the grooves *c*, on the opposite sides of the bars D, with respect to the knives E, as illustrated. These bearing plates G, bear at their inner edges against the inner wall of the grooves *c*, as shown and their outer edges form a bearing for the knives E, in the adjoining grooves.

By reason of the construction just described, it will be seen that the knives E, are securely held in position upon the rolls, and are so braced as to enable them to resist great strain; and it will be further perceived that any one of the knives may be readily removed and replaced when desired, without impairing the roll or disturbing the other knives.

In practice, motion may be transmitted to the rolls C, by any suitable gearing, but I prefer to employ belt gearing and for this purpose I extend the trunnions *b'*, as shown and provide the same with pulleys *z*.

H, indicates the dead knives of my improved comminuter, of which one is employed in conjunction with each roll C. These knives H, as better shown in Fig. 4, of the drawings, are secured to blocks I, which are fixed upon rock shafts J, which in turn are journaled in the slidable bearing blocks K. The blocks

K, which are suitably mounted and secured upon the side bars *a*, of the frame B, are provided at their rear ends with upwardly disposed flanges *I'*, in which are formed threaded bores for the reception of the threaded adjusting screws L. These adjusting screws L, are journaled in suitable bearings *j*, rising from the frame B, and they are provided at their rear ends with angular heads *k*, for the engagement of a wrench or the like through the medium of which they may be readily rotated to move the bearing blocks K, and the dead knives toward or from the rolls. By this construction it will be seen that the machine may be readily regulated so as to cut the cane into small or large pieces.

Fixedly connected to or formed integral with the ends of the rock shafts J, upon which the dead knives are mounted, are crank arms M, which are provided at their lower ends with apertures or notches designed to loosely receive the horizontal rods or bolts N. Mounted upon the rods or bolts N, and bearing at one end against the bearings *k'*, and at their opposite ends against the arms M, of the shafts J, are coiled springs P, which are designed and adapted to hold the dead knives H, at a proper angle with respect to the rolls C. These coiled springs P, are sufficiently strong in practice to hold the dead knives rigid so long as no foreign substance or large piece of cane is encountered, but they are designed to give and allow of a downward movement of the forward portion of the dead knives when an extraordinary large piece of cane, or a foreign substance comes between said knives and the rolls, whereby it will be seen that the large piece of foreign substance will be discharged and damage to the dead knives and the knives of the rolls will be prevented.

In the practice of my invention I may em-

ploy any approved mechanism for feeding the cane between the dead knives and the knife carrying rolls where the cutting action takes place, and as such mechanism forms no part of my invention I have deemed it unnecessary to illustrate the same.

It will be seen from the foregoing description that I have provided a strong, and durable comminuter and one embodying such a construction of cutting apparatus that the danger of choking, is obviated.

Having described my invention, what I claim is—

1. In a comminuter, substantially as described, the combination with a frame, and a knife carrying roll journaled thereon; of the rock shaft J, journaled in the bearing blocks and having the arm M, the dead knife fixedly mounted on said rock shaft, the rod N, mounted in suitable bearings upon the frame, and the coiled spring surrounding said rod and engaging the arm M, of the rock shaft, substantially as and for the purpose set forth.

2. In a comminuter, substantially as described, the combination with a frame and a knife carrying roll journaled thereon; of the slidable bearing blocks H, mounted on the frame, the threaded bolts journaled in bearings on the frame and engaging the blocks H, the rock shaft J, journaled in the blocks H, and having the arm M, the dead knife mounted on said rock shaft, the rod N, mounted in suitable bearings upon the frame and the coiled spring surrounding said rod and engaging the arm M, of the shaft J, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN M. COOPER.

Witnesses:

HELMUTH HOLTZ,
RICARDO DEE.