No. 656,676. Patented Aug. 28, 1900.

O. B. STILLMAN.

CANE MILL.

(Application filed May 18, 1900.)

(No Model.)

Fig. 2.

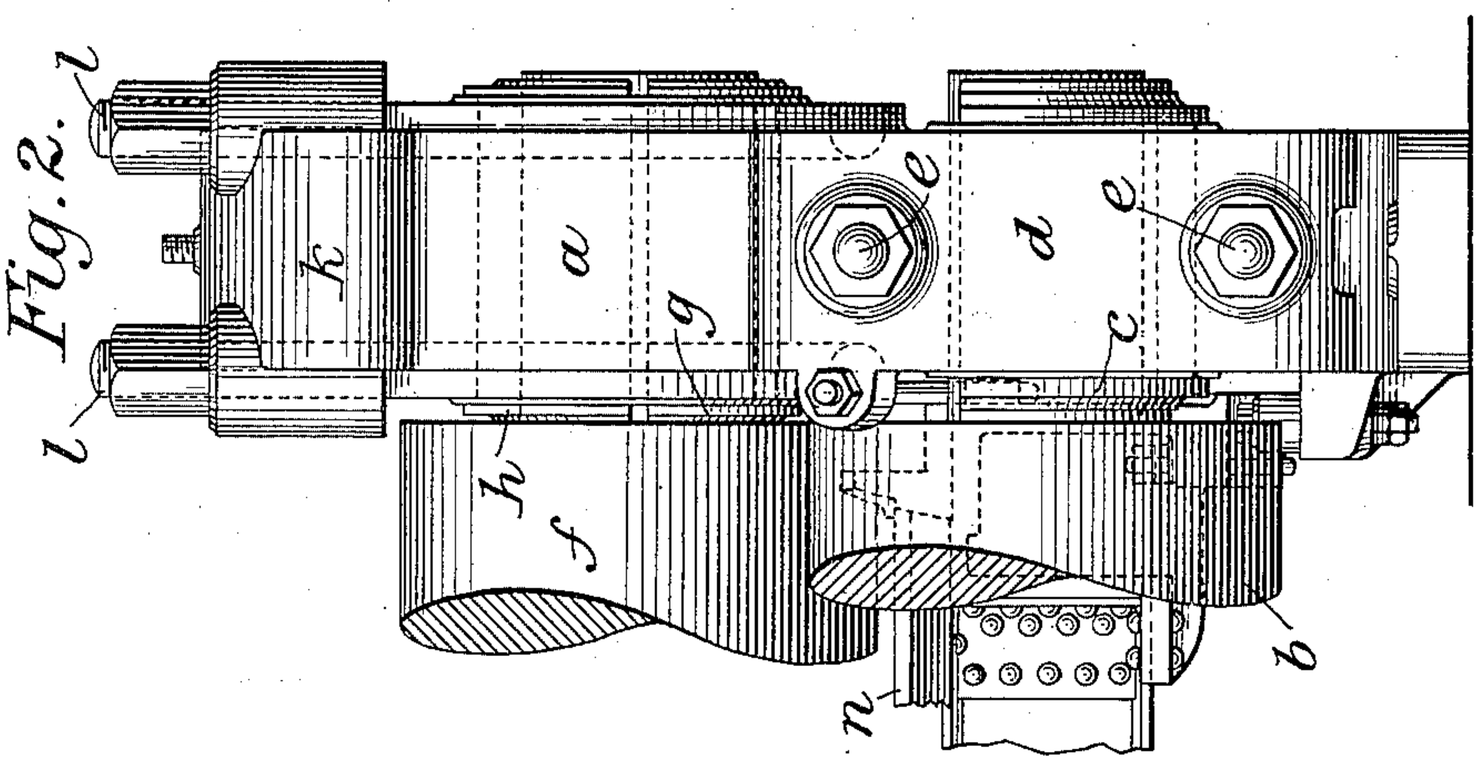
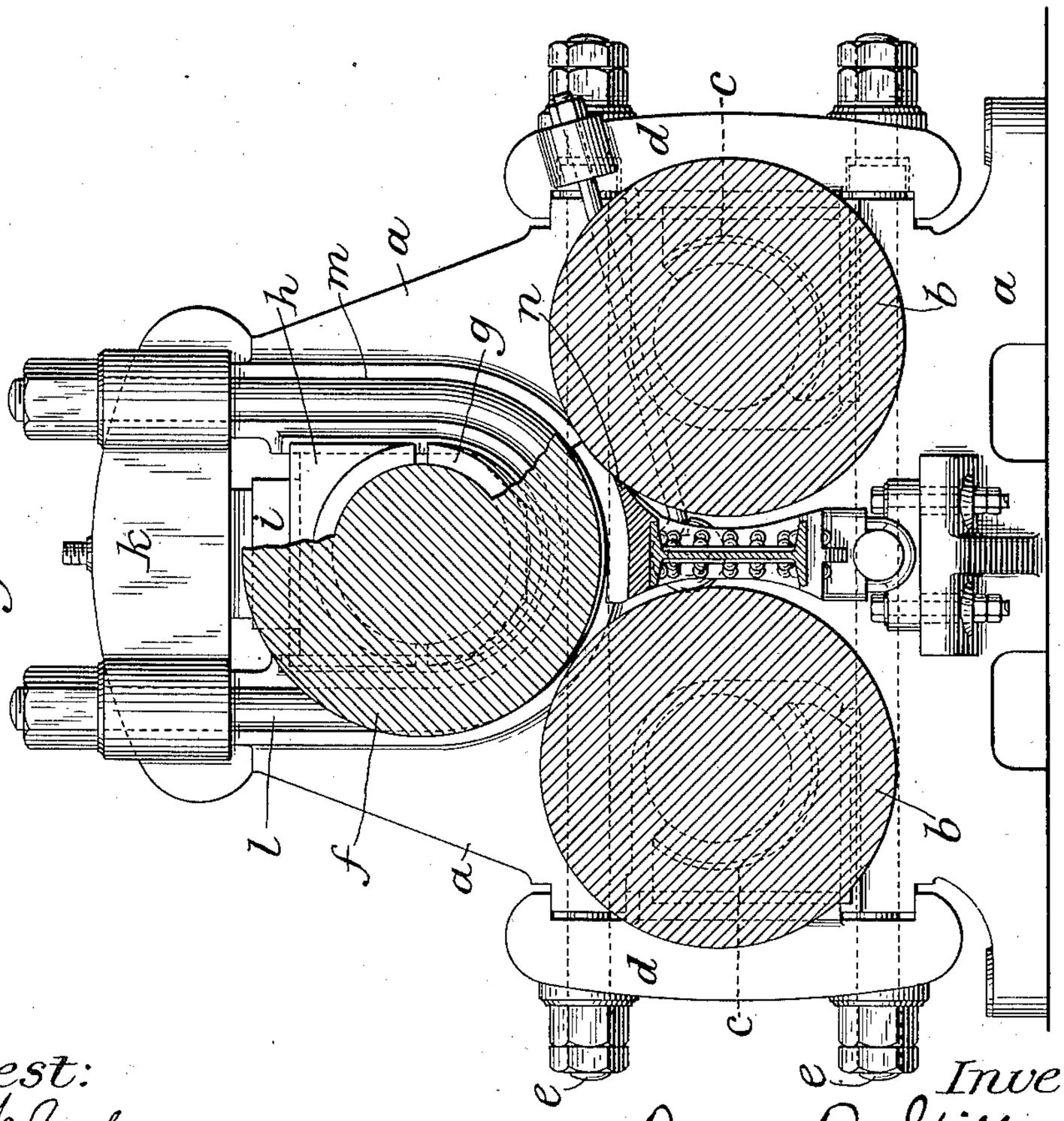


Fig. 1.



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UNITED STATES PATENT OFFICE.

OSCAR B. STILLMAN, OF NEW YORK, N. Y.

CANE-MILL.

SPECIFICATION forming part of Letters Patent No. 656,676, dated August 28, 1900.

Application filed May 18, 1900. Serial No. 17,144. (No model.)

To all whom it may concern:

Be it known that I, OSCAR B. STILLMAN, a citizen of the United States, residing in New York, borough of Manhattan, State of New York, have invented certain new and useful Improvements in Cane-Mills, &c., of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention is particularly concerned with mills which are used for the purpose of expressing the juice from sugar-cane, but is applicable also to other machines of like general character, whether they are used for the particular purpose herein referred to or for some other purpose. Such machines are necessarily massive, and as a consequence some conditions have to be met which can be neglected in machines of lighter construction. Machines of this general class which are designed for the particular purpose referred to generally comprise two under or lower rolls and one upper roll which coöperates with both under rolls, the plane of the axis of the upper roll being about midway between the planes of the axes of the two lower rolls. All of the rolls are supported in suitable bearings in massive housings, and the upper roll is pressed down upon the lower rolls by a hydraulic piston or other suitable means. The cap which sustains the thrust of the hydraulic cylinder is usually secured to the corresponding housing by through-bolts which extend from the top of the cap to the under side of the housing. The use of such through-bolts not only requires for their accommodation the removal of material from the housing at points where great strength is required, but by reason of the necessarily-large diameter of the journals of the rolls it necessitates a considerable separation of the rolls themselves. This is undesirable for many reasons, and particularly because it necessitates the use of a correspondingly-wide knife or turn-plate to bridge the space between the rolls at a suitable height above the axles. The knife or turn-plate is expensive in proportion to its width, and a wide knife or turn-plate is difficult to adjust and maintain in correct working condition and gives much trouble in the operation of the mill, having a relatively-large area of surface subject to load, and therefore increasing friction and power loss, and having a relatively-long overhang which makes the edge thinner, therefore hastening the wear of the plate, and by depriving the edge of direct support facilitates vibration or chattering of the knife or plate, so that nuts on the mill work loose and particles of bagasse are dragged under the edge of the plate, deflecting and bending the knife and beam and clogging the grained roll-surface, so that the cane fiber compressed upon this yielding and absorbent surface does not relieve itself of its juice.

The object of the invention is therefore to provide for such a construction of mill, and particularly for such means of securing the cap to the housing as to permit the lower rolls to be set closer together than has been possible heretofore.

The invention will be more fully described hereinafter with reference to the accompanying drawings, in which—

Figure 1 is a vertical section of the improved mill, the upper roll being partly broken away to show details of construction which otherwise would be obscured; and Fig. 2 is a front elevation showing one of the housings with portions of the rolls and the knife or plate and its support.

Each housing *a* (only one of which is shown) is suitably formed to receive and support the rolls and the knife or turn-plate. The lower rolls *b* have their journals supported in suitable bearing-blocks *c* and are held in position by caps *d* and horizontal through-bolts *e*. The upper roll *f* has its journals mounted in movable bearing-blocks *g* and *h*, which are suitably supported in the upper part of the housing. The upper bearing-block *h* is pressed downward to force the upper roll toward the lower rolls by a suitable hydraulic or other mechanism which is indicated at *i*. The thrust of such hydraulic or other mechanism is sustained by a massive cap *k*, which according to this invention is held to the housing by U-bolts *l*, one on each side of the housing. Each U-bolt is preferably let into the housing, a suitable recess being formed therefor in the side of the housing, as indicated at *m*. In this manner the cap *k* is firmly held to the housing against the thrust of the hydraulic or other mechanism *i* with-

out requiring the use of vertical through-bolts, which, as will be seen by an inspection of Fig. 1, would require the lower rolls *b* to be set considerably farther apart than is the case in the improved construction.

The knife or turn-plate *n*, as is clearly shown in Fig. 1, is comparatively narrow and yet by reason of the narrow space between the lower rolls bridges such space at a proper height above the axis of such rolls. Moreover, by reason of its narrowness it can be made sufficiently rigid without undue weight. It has a comparatively-small surface subject to load, and its forward edge need not be so thin as to wear rapidly or by reason of insufficient support as to produce chattering. With a wide knife or turn-plate supported as usual upon gudgeons, but slightly below the surface of the plate, the adjustment of the knife to take up wear at its forward edge causes its rear edge to be thrown up, and therefore to offer increased resistance to the passage of the bagasse to such an extent that the forward edge of the knife is often thrown away from the front lower roll.

I claim as my invention—

In a machine of the character described, the combination with the upper and lower rolls, movable bearing-blocks for the upper roll and the housing, of a cap for the bearing-blocks of the upper roll and a U-bolt securing said cap in place, the housing having a recess into which the U-bolt is let, substantially as shown and described.

This specification signed and witnessed this 17th day of May, A. D. 1900.

OSCAR B. STILLMAN.

In presence of—

ANTHONY N. JESBERA,

W. B. GREELEY.