

(No Model.)

2 Sheets—Sheet 1.

J. N. SANDERS & D. C. HERRINGTON.

CANE MILL.

No. 488,031.

Patented Dec. 13, 1892.

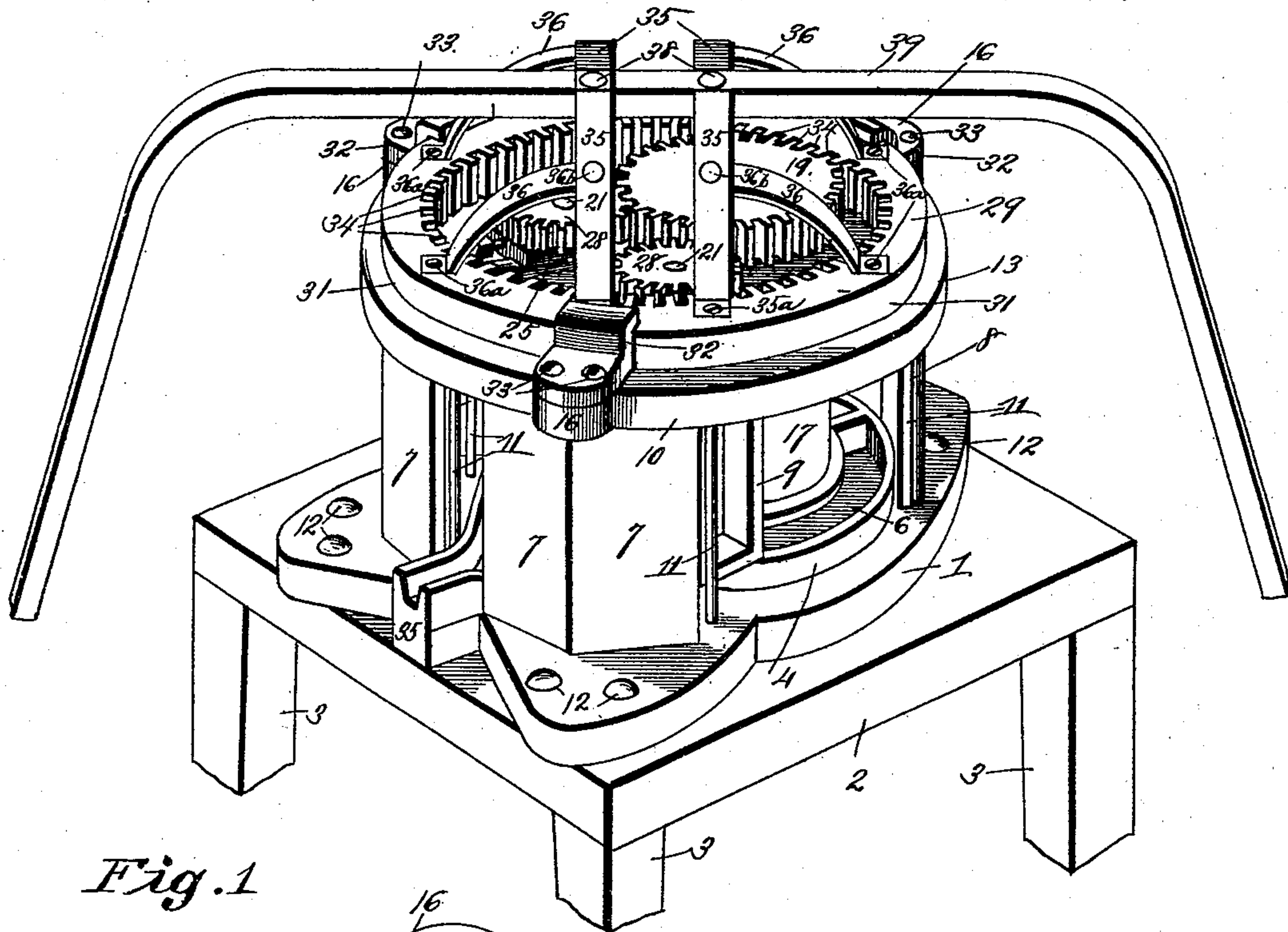


Fig. 1

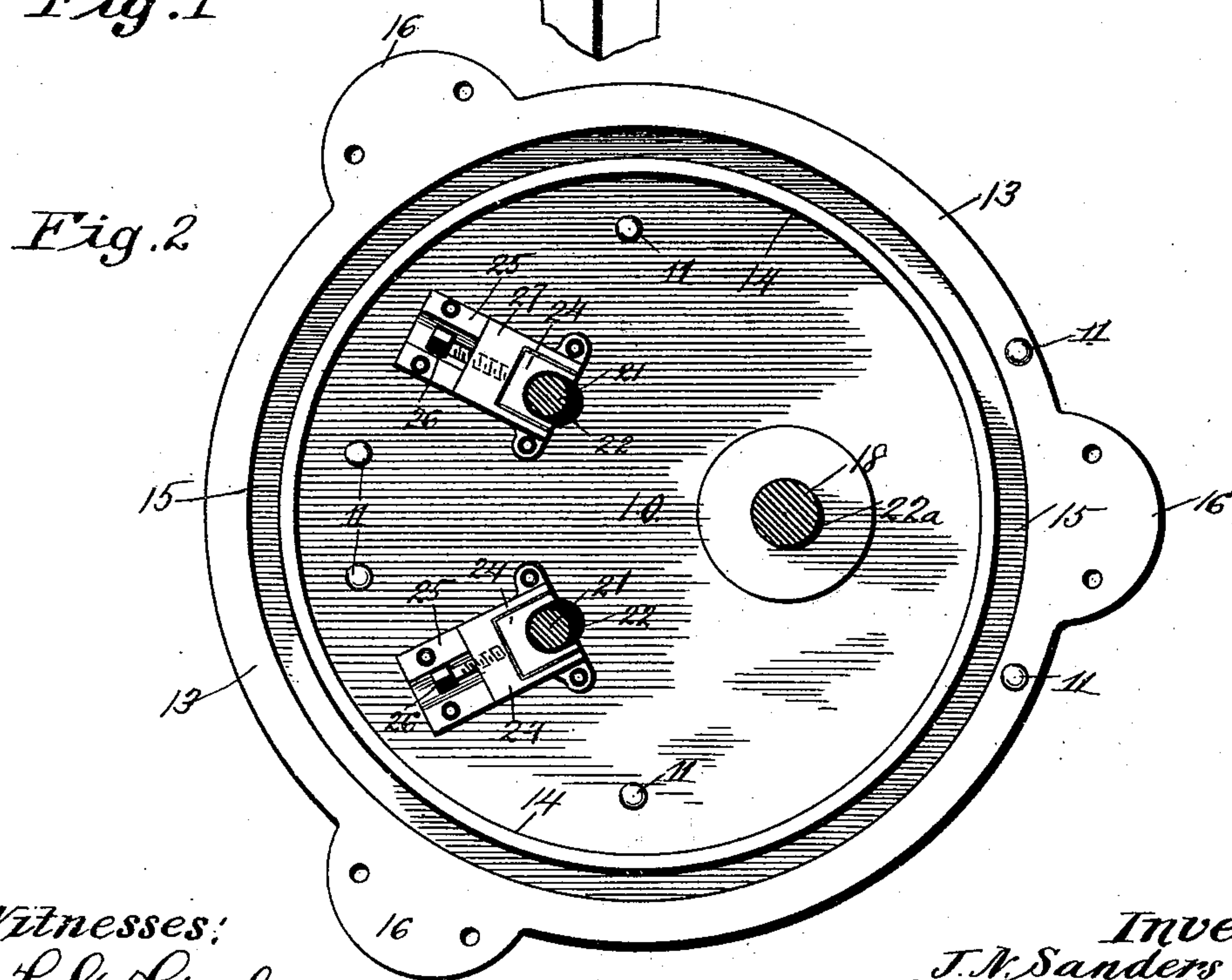


Fig. 2

Witnesses:
F. G. Fischers
J. M. L. Condon

Inventors:
J. N. Sanders and
D. C. Herrington.
By *Harmon & Harmon*
attys.

(No Model.)

2 Sheets—Sheet 2.

J. N. SANDERS & D. C. HERRINGTON.
CANE MILL.

No. 488,031.

Patented Dec. 13, 1892.

Fig. 3

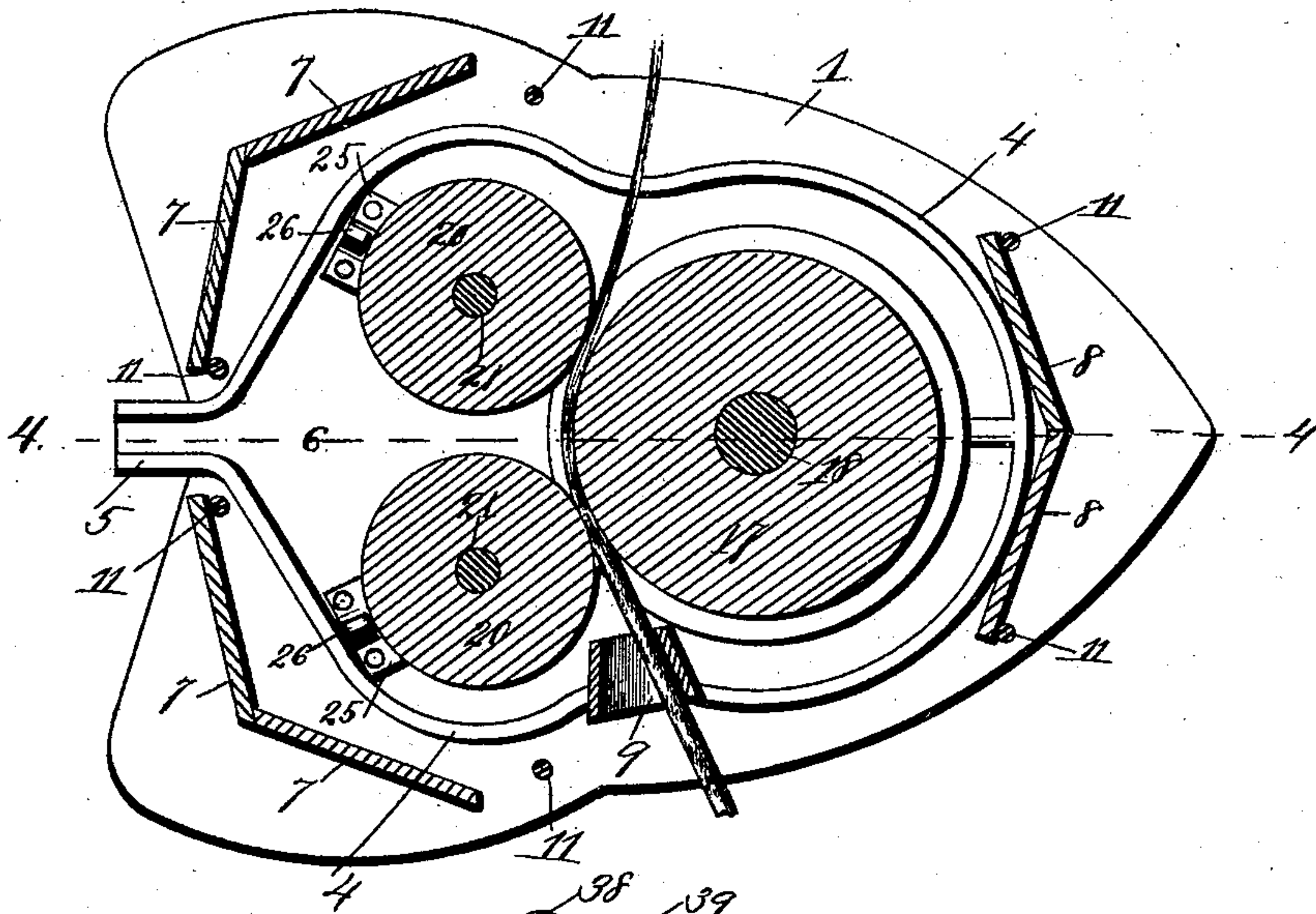
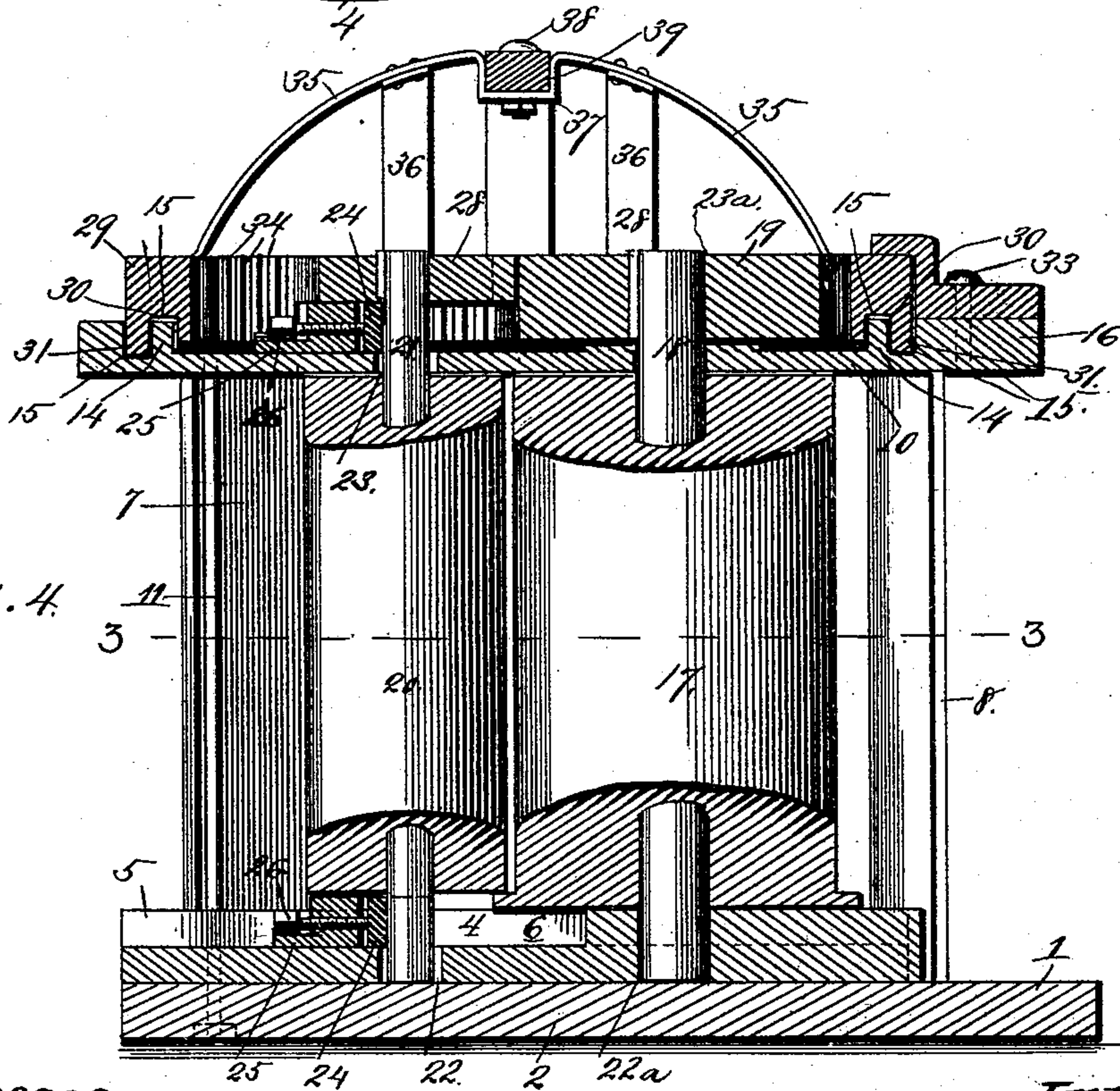


Fig. 4



Witnesses:

F. G. Fischer

Geo. L. Condon

Inventors

J. N. Sanders and
D. C. Herrington.

By

H. C. Van H. H. H.

Attys.

UNITED STATES PATENT OFFICE.

JASPER N. SANDERS AND DAVID C. HERRINGTON, OF GRAIN VALLEY,
MISSOURI.

CANE-MILL.

SPECIFICATION forming part of Letters Patent No. 488,031, dated December 13, 1892.

Application filed May 2, 1892. Serial No. 431,440. (No model.)

To all whom it may concern:

Be it known that we, JASPER N. SANDERS and DAVID C. HERRINGTON, of Grain Valley, Jackson county, Missouri, have invented certain new and useful Improvements in Cane-Mills, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to machines for expressing the saccharine juice from sugar-cane and also for similar and analogous purposes; and the objects of our invention are to produce a cane-mill which shall be simple, strong, durable, and inexpensive in construction, and which shall also be direct, positive, and very rapid and effective in its operation.

A further object of our invention is to produce a cane-mill which, in addition to the advantages above enumerated, shall develop but little friction during its operation, and in which the pressure of the squeezing-rolls shall be capable of ready control, so as to produce the most effective results.

To the above purposes our invention consists in certain peculiar and novel features of construction and arrangement, as hereinafter described and claimed.

In order that our invention may be fully understood, we will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a perspective view of a cane-mill embodying our invention. Fig. 2 is a plan view of the same with the top gearing of the machine removed. Fig. 3 is a horizontal section of the same on the line 3 3 of Fig. 1. Fig. 4 is a transverse vertical section of the same on the line 4 4 of Fig. 3.

In said drawings, 1 designates the base of the machine, the said base being either of wood or metal, as preferred, and being also preferably of approximately-heart shape, as shown, the base resting horizontally either upon a suitable horizontal support 2, having uprights 3, or directly upon the ground, as preferred. Upon the upper side of the base 1 is formed or suitably secured a flange 4, which is preferably of approximately-trefoil shape, and the ends of which project parallel with each other at the larger end of the base, so as

to form a suitable discharge-spout 5 for the expressed juices from the canes, the bottom 6, inclosed within the ridge 4, being preferably inclined downward toward the spout 5, so as to facilitate the drainage of the juices from the machine. At opposite sides of the middle of the larger end of the base 1 are placed two vertical guards 7, each of which is of approximately-V form in cross-sections, as shown, and the concave sides of which are placed inward toward the squeezing-rolls of the machine. At the opposite end of the machine is placed a third vertical guard 8, which is also of approximately-V form in cross-section and which stands in line with the space between the two guards 7, the concave side of this guard 8 being also presented inward toward the squeezing-rolls of the machine.

At one side of the machine is placed a vertical ingress-guide 9 for the canes, said guide being located near the edge of the corresponding guard 7, and preferably having its two sides converging inwardly, as shown.

10 designates the top or cap piece of the machine, the said top or cap piece being either of wood or of metal, as preferred, and being also preferably of circular form in marginal contour, as shown. This top or cap piece 10 rests horizontally upon the upper ends of the guards 7 and 8 and also upon the upper end of the guide 9, and said top or cap piece is secured in its described position by a number of vertical tie bolts or rods 11, which are passed downward through the top or cap piece, and also similarly through the base 1, and to the lower ends of which are secured suitable retaining-nuts, as indicated in dotted lines in Fig. 4, the lower ends of these rods or bolts 11 extending either through the support 2 or terminating at the under side of the base 1, as preferred. If the horizontal support 2 be used, the base 1 may be securely bolted to said support, as at 12; or if the support be not employed the machine may be suitably anchored to the ground, so as to remain at all times perfectly stationary and rigid. At its outer margin and on its upper side the top or cap piece is formed or otherwise provided with a circular flange 13, and at a slight distance from said marginal flange with an inner circular and concentric flange 14, a circular

guide-groove 15 being thus formed between the flanges 13 and 14, for a purpose to be hereinafter explained. At the margin of the top or cap piece 10 are formed three outwardly-
 5 extending lugs or ears 16, which are preferably so disposed that each is located opposite the interval between the other two, and the purpose of these lugs or ears will be hereinafter explained.

10 17 designates the larger or main roll of the machine, and 18 its shaft, this roll being interposed vertically between the base 1 and the top or cap piece 10 and having the lower end of its shaft journaled in the base 1. The
 15 upper end of the shaft 18 of the roll 17 projects upward through the top or cap piece 10 of the machine, and the said roll is located adjacent to the smaller end of the base 1. Upon the upper end of the roll-shaft 18 is
 20 mounted a horizontal gear-wheel 19, which lies above the top piece 10.

20 designates the two auxiliary squeezing-rolls of the machine, and 21 the shafts of the same, the said auxiliary rolls extending parallel with the main roll 17 and vertically between the base 1 and cap 10, at the larger
 25 end of the base 1, and at points at opposite sides of the middle of the said larger end. The lower ends of the shafts 21 work within elongated openings or slots 22, which are
 30 formed in the base 1 and which converge toward the opening 22^a, in which the lower end of the main-roll shaft 18 is inserted, while the upper ends of the shafts 21 extend through
 35 slots or elongated openings 23, which are formed in the cap 10 and which converge toward the opening 23^a, through which the upper end of the main-roll shaft 18 projects. Thus it will be seen that the auxiliary rolls
 40 20 are permitted to approach toward and to recede from the main roll 17. These auxiliary rolls 20 are normally pressed into contact with the main roll 17 by adjustable bearing-blocks 24, which are mounted in guides
 45 25, which latter are bolted or otherwise secured to the upper sides of the base 1 and cap 10. The blocks 24 are moved toward or away from the main roll 17 by adjusting-
 50 screws 26, which pass through heads 27 of the slides 25 and the front ends of which abut against the rear ends of the guides, as shown.

At its upper end each shaft 21 carries a gear-pinion 28, the teeth of which mesh with the teeth of the gear-wheel 19 of the main roll 17,
 55 and it is to be observed that while the auxiliary rolls 20 are of equal diameter they are of much less diameter than the main roll 17.

29 designates a gear ring or annulus, which is of slightly-less diameter than the cap 10
 60 and which on its under side is formed with an annular groove 30, into which projects the guide-flange 14, the annular rib 31 at the under side of the outer margin of the ring or annulus entering the groove 15 of the cap 10.

65 Thus the ring or annulus is prevented from lateral displacement from the cap 10 and said ring or annulus is prevented from vertical

displacement by three retaining-lugs 32, which are bolted, as at 33, or otherwise secured to the upper sides of the lugs or ears 16 and
 70 which extend inward and upward, so as to overlie the upper side of the ring 29, as shown. On its inner side the ring or annulus 29 is formed with a circular series of gear-teeth 34, which are engaged by the teeth of the gear-
 75 wheel 19 of the main-roll shaft 18.

Two arch-formed supports 35 are secured, as at 35^a, at their ends to the upper side of the ring or annulus 29 and extend parallel with each other across said ring, said arched
 80 supports being braced laterally by two segmental braces 36, which are secured at their lower ends, as at 36^a, to the upper side of the ring 29, and the upper ends of which are secured, as at 36^b, to the support 35. Midway
 85 of their length these arch-formed supports 35 are formed with pendent U-shaped sockets 37, within which is secured, as at 38, a sweep or beam 39, to the ends of which the animals for operating the mill are suitably harnessed. 90

Now it will be seen that when the animals are started and caused to travel in a circular path the sweep is carried around with them, causing the ring or annulus 29 to revolve and to transmit its motion, through its gear-teeth
 95 34, to the gear-wheel 19 of the main roll 17, and consequently revolving said main roll. The motion of the main roll 17 is communicated through its gear-wheel 19 to the gear-pinions 28 of the auxiliary rolls 20, and causing
 100 said rolls 20 also to revolve. The canes are inserted into the guide 9, and their entering ends are grasped by the main and auxiliary rolls of the machine, and said canes are squeezed so as to express the juice from the
 105 canes. This juice flows down the rolls and into the space within the flange 4, and is guided thence through the spout 5 out of the machine.

From the above description it will be seen that we have produced a cane-mill which is
 110 simple, strong, durable, and inexpensive in construction, direct and positive in its action, the operation of which develops but little friction, and which effectively expresses the juices from the canes. 115

Having thus described our invention, what we claim as new therein, and desire to secure by Letters Patent, is—

1. A cane-mill comprising a framework having a top or cap, a number of parallel vertical
 120 rolls mounted in said framework, a circular groove formed upon the top of the cap, and an internally-toothed gear-ring having a circular rib to engage said groove, substantially as set forth. 125

2. A cane-mill comprising a suitable framework having a top or cap provided with a circular groove and also with outwardly-projecting lugs or ears, an internally-toothed gear-ring mounted on said top or cap and having
 130 a circular rib to engage said groove, and a number of retaining-pieces secured to the lugs or ears and overlying the ring, substantially as set forth.

3. In a cane-mill comprising a suitable
framework having a top or cap and a num-
ber of vertical rolls mounted parallel with
each other within the frame and carrying at
5 their upper ends intermeshing gear-wheels,
and an internally-toothed gear-ring mounted
to turn horizontally upon the top or cap, a
pair of arches arranged parallel with each
other and fastened at their opposite ends to
10 the gear-ring and bent downwardly at their
middle to form sockets or recesses into which

a sweep or beam is placed, and arched braces
secured at one end to the parallel arches and
at their opposite ends to the ring or annulus,
substantially as described. 15

In testimony whereof we affix our signatures
in the presence of two witnesses.

JASPER N. SANDERS.

DAVID C. HERRINGTON.

Witnesses:

M. M. HERRINGTON,

J. B. WILLIAMS.