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PATENTED FEB. 6, 1906.

W. H. KLAUK & J. P. LOWRY.
HEMP BREAKING MACHINE.

APPLICATION FILED NOV. 4, 1903.

2 SHEETS—SHEET 1.

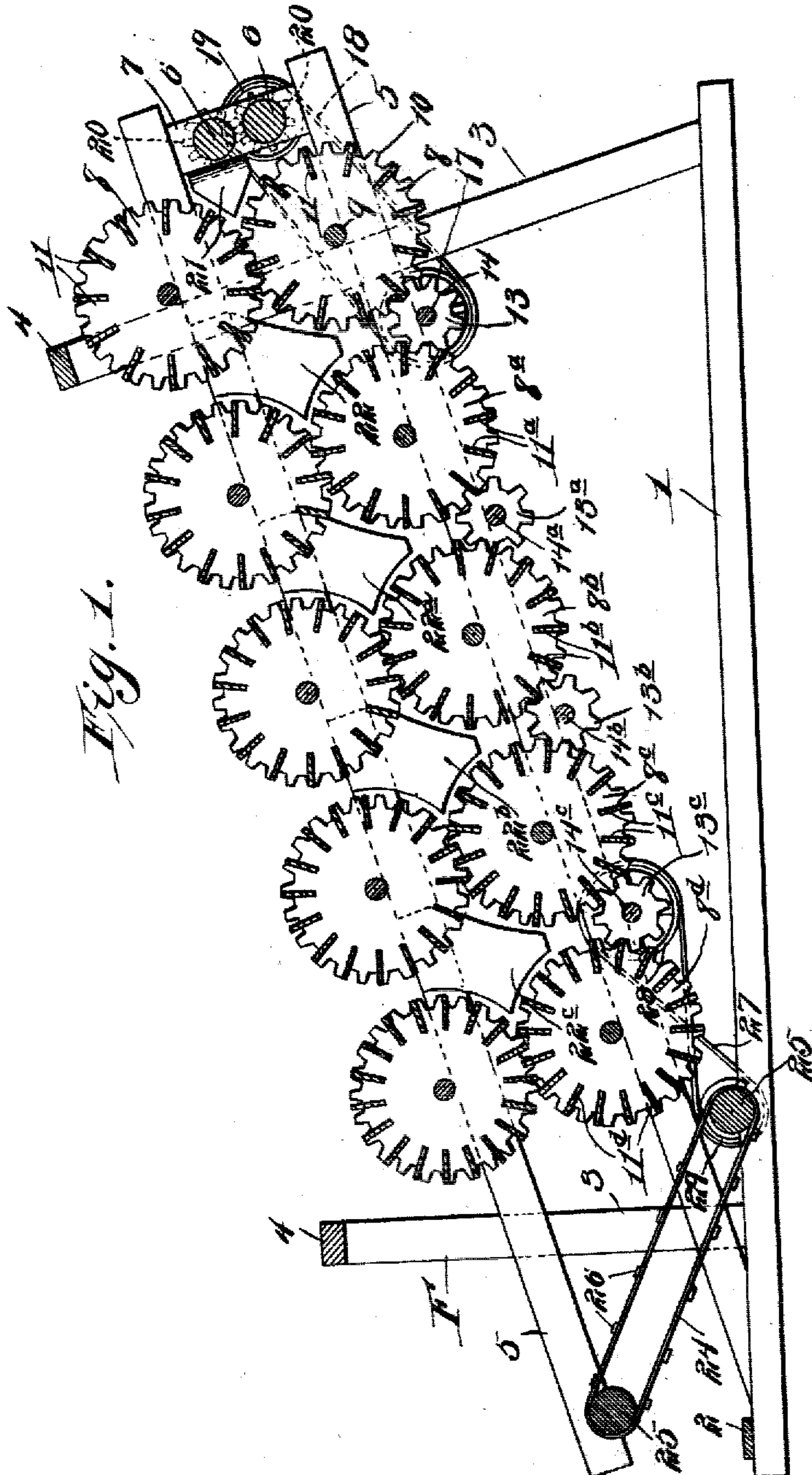


Fig. 1.

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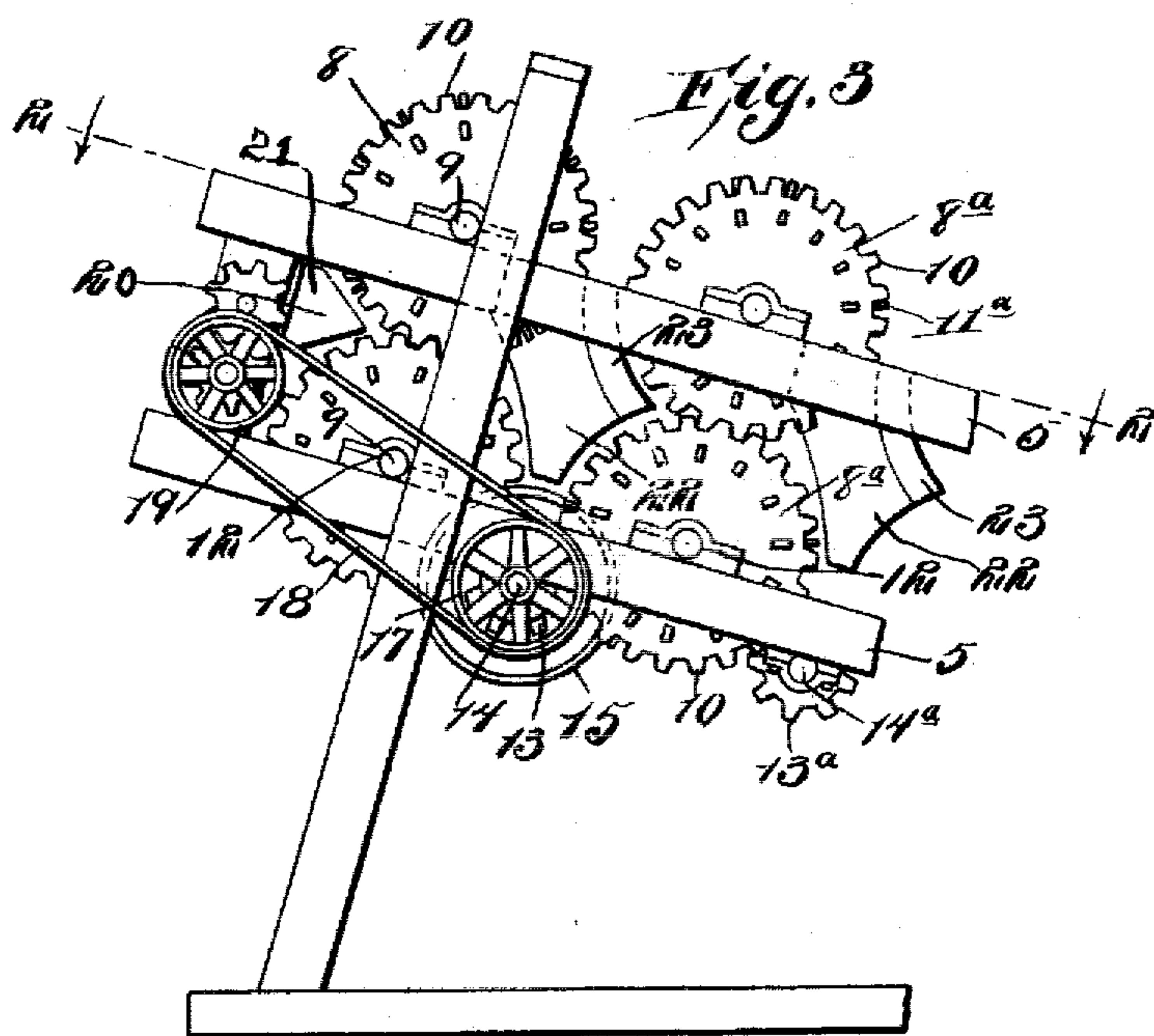
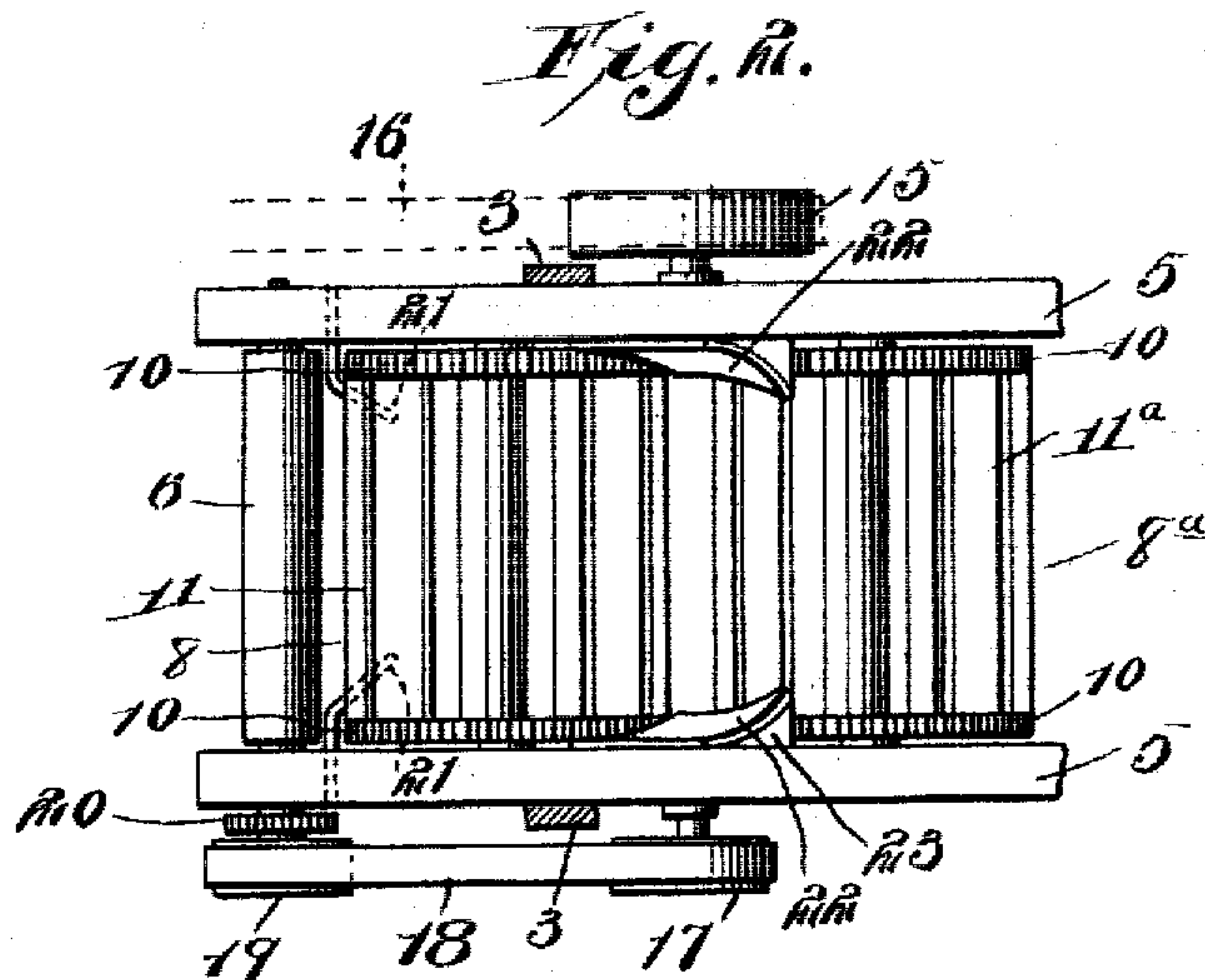
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UNITED STATES PATENT OFFICE.

WILLIAM H. KLAUK AND JAMES P. LOWRY, OF WINCHESTER,
KENTUCKY.

HEMP-BREAKING MACHINE.

No. 811,726.

Specification of Letters Patent.

Patented Feb. 6, 1906.

Application filed November 4, 1903. Serial No. 179,854.

To all whom it may concern:

Be it known that we, WILLIAM H. KLAUK and JAMES P. LOWRY, citizens of the United States, residing at Winchester, in the county of Clark and State of Kentucky, have invented a new and useful Hemp-Breaking Machine, of which the following is a specification.

This invention relates to hemp-breaking machines; and the principal object of the invention is to provide, in an improved hemp-breaking machine of the type in which the breaking mechanism consists in a plurality of pairs of intergeared revolving breakers, means for controlling the feed of the hemp to the breakers, means for keeping the hemp between the transverse slats or bars of the breakers, so that it will not become entangled in the gears, and improved means for receiving the broken hemp and discharging it upon any suitable receiving-surface.

A further object of the invention is to provide in a hemp-breaking machine of the type specified an improved arrangement of revolving breakers so constructed that as the hemp passes from one pair of breakers to the next pair it will be caught in a different place and slightly jerked, thus aiding in the separation of the woody material from the fiber.

In attaining the objects above mentioned we make use of the novel construction and combination of parts of a hemp-breaking machine hereinafter described, illustrated in the accompanying drawings, and having the novel features thereof specifically pointed out in the appended claim.

In the drawings, Figure 1 is a view in vertical longitudinal section through the complete machine. Fig. 2 is a detail view in section on the line 2 2 of Fig. 3. Fig. 3 is a detail view showing the mechanism for transmitting motion to the feed-rollers at the front of the machine.

Referring to the drawings, in which corresponding parts are designated by similar characters of reference, F designates the frame of the machine, comprising a horizontal base consisting of longitudinal members 1 and transverse bars 2 and a superstructure consisting of standards 3, connected by cross-pieces 4 at the tops and supporting inclined longitudinal members 5:

The front ends of the members 5 are arranged at a considerably greater elevation than their rear ends to facilitate the passage

of the hemp through the machine, and at the front of the machine a pair of feed-rollers 6 are rotatably supported between the sides of the frame, being journaled in blocks 7, secured between the inclined longitudinal members 5. Immediately behind the feed-rollers is the first pair of breakers 8, each of which consists of a shaft 9, a pair of gears 10, and a plurality of slats or breaker-bars 11, mortised at the ends into the gears 10. The breakers 8 are of such size that the gears of one breaker mesh with those of the breaker below, and power being applied to the lower breaker the upper breaker will be rotated through the engagement of its gears with the lower breaker. There are five pairs of breakers 8, 8^a, 8^b, 8^c, and 8^d, respectively, the lower member of each pair being rotatably mounted in bearing-blocks 12 upon the lower inclined longitudinal members 5 and the upper member of each pair being supported in similar bearing-blocks upon the upper inclined longitudinal members. All of the breakers are similar in general construction; but the slats 11 of the breakers 8 are farther apart than the slats 11^a of the breakers 8^a, and the slats 11^a are farther apart than the slats 11^b, while slats 11^c are closer together than slats 11^b and farther apart than slats 11^d. Power is imparted to the lower breaker 8 by means of gears 13 on a shaft 14, journaled beneath the lower inclined longitudinal bars 5 between the breakers 8 and breakers 8^a. The shaft 14 bears at the end a pulley 15, over which runs a belt 16 from any suitable source of power. (Not shown.)

The gears 13 mesh with the gears of the lower breaker 8 and also with the gears of the lower breaker 8^a, so imparting movement directly to both pairs of breakers 8 and 8^a. Motion is transmitted from the breakers 8^a to the breakers 8^b by spur-gears 13^a on a shaft 14^a between breakers 8^a and 8^b. Similarly gears 13^b on a shaft 14^b serve to transmit motion from breakers 8^b to breakers 8^c, and motion is transmitted from breakers 8^c to breakers 8^d by means of gears 13^c on a shaft 14^c.

At the end of the shaft 14 opposite the pulley 15 there is mounted a small pulley 17, over which travels a belt 18, which imparts movement to the lower feed-roller 6 from its contact with a pulley 19 on the end of said feed-roller. Motion is imparted from the lower roller to the upper roller by means of intermeshing gears 20, as shown in Fig. 3.

To insure the passage of the hemp from the feed-rollers to the breakers without becoming entangled with the gears at the ends of the feed-rollers, guides 21 are provided on the rear surfaces of the blocks 7 with their ends disposed rearward and inward, as shown. The guides are preferably thin plates of metal or other suitable material with pointed ends which project between the upper and lower breakers 8. The guidance of the hemp from the breakers 8 to the succeeding breakers is effected by means of inclined guide members 22, 22^a, 22^b, and 22^c, arranged as shown in Fig. 1 and secured upon the upper inclined longitudinal members 5, the necessary inclination inward being secured by means of blocks of the form shown at 23 in Fig. 2.

After passing through the machine the hemp is discharged from the breakers 8^d upon an endless apron 24, supported upon rollers 25 and provided with transverse cleats 26 to prevent the slipping of the material carried. The apron 24 is disposed at an angle to the plane of travel of the hemp through the machine, and the lower roller 25 is disposed below the lower breaker 8^d, so that the hemp discharged by the breaker 8^d cannot fail to fall upon the endless apron. Movement is imparted to the lower roller 25 by means of a cross-belt 27, running on a pulley 28 at one end of the shaft 14^c and a pulley 29 at the adjacent end of the lower roller 25.

The machine having been set in operation by means of the driving means already described, the hemp will be fed to the feed-rollers by persons at the front of the machine and will be carried automatically through the machine, thoroughly broken by the breakers, and discharged from the last pair of breakers upon the traveling apron 24. The guide members 21 between the feed-rollers and the breakers 8 insure the proper entrance of the hemp between the first pair of breakers, and the guides arranged between the several pairs of breakers prevent the hemp from being deflected laterally and becoming tangled in the gears of the revolving breakers. The increasing numbers of slats in the successive pairs of breakers from the receiving end of the machine to its discharge end causes the hemp to be folded or crimped into a greater number of folds at each passage from one pair of breakers to the next, and as the depth of each fold is the same the hemp is slightly jerked or stretched as it is taken by one pair

of breakers from the pair behind. In consequence of this jerking action the woody matter of the hemp is thoroughly separated from the fiber, so that the broken hemp discharged upon the traveling apron 24 is reduced almost to a pure fiber.

By arranging the gears 13, 13^a, 13^b, and 13^c below the axis of the lower breakers we are enabled to place the several pairs of breakers closer together than we should otherwise be able to do, and by bringing the several pairs of breakers closer together the possibility of any failure of the hemp to pass directly forward through the machine is completely avoided.

From the foregoing description and the accompanying drawings it will be noted that the machine is simple in construction and is more compact than machines of the type to which it belongs and which have heretofore been made. Consequently it will be seen that the rate at which hemp may be passed through the machine and subjected to the action thereof is increased and the amount of hemp that can be treated by the machine in a given time correspondingly enlarged.

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

A hemp-breaking machine embodying a plurality of pairs of breakers, driving-gears meshing with the lower series of breakers and having their journals disposed below those of the said breakers whereby the lower breakers may be closely disposed thereby to prevent any tendency of the gears to catch and mutilate the hemp, inward-curved angularly-arranged guide members having pointed terminals disposed between the succeeding pairs of breakers, and an endless conveyer arranged at the lower end of the machine and disposed at an angle oblique to the plane of the travel of the hemp therethrough, the lower end of the conveyer being arranged below the lowest breaker, whereby the hemp discharged from this breaker is caused to be caught by the conveyer.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

WILLIAM H. KLAUK.
JAMES P. LOWRY.

Witnesses:

W. O. BROCK.
T. PREWITT.