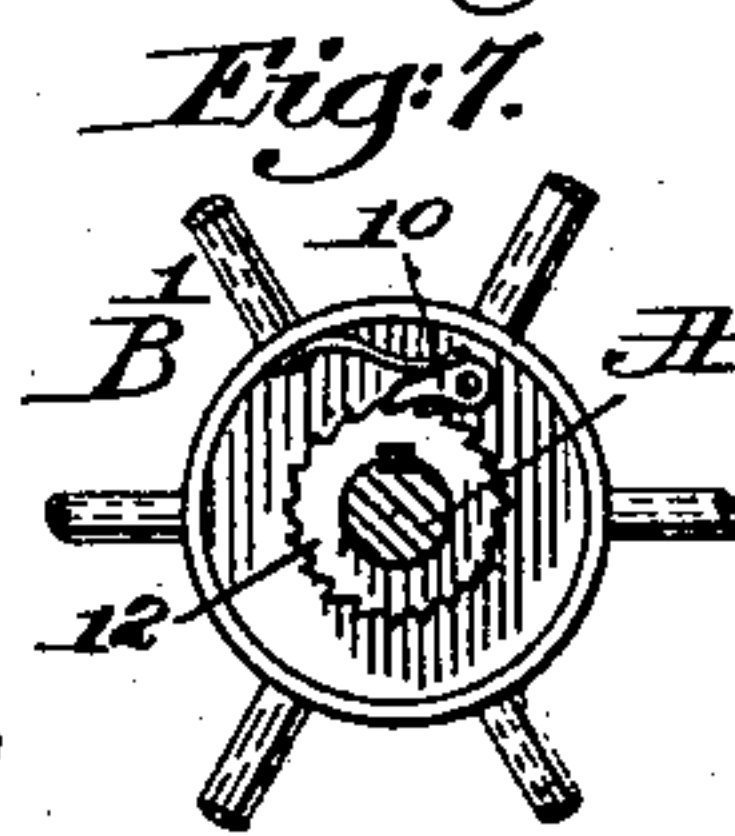
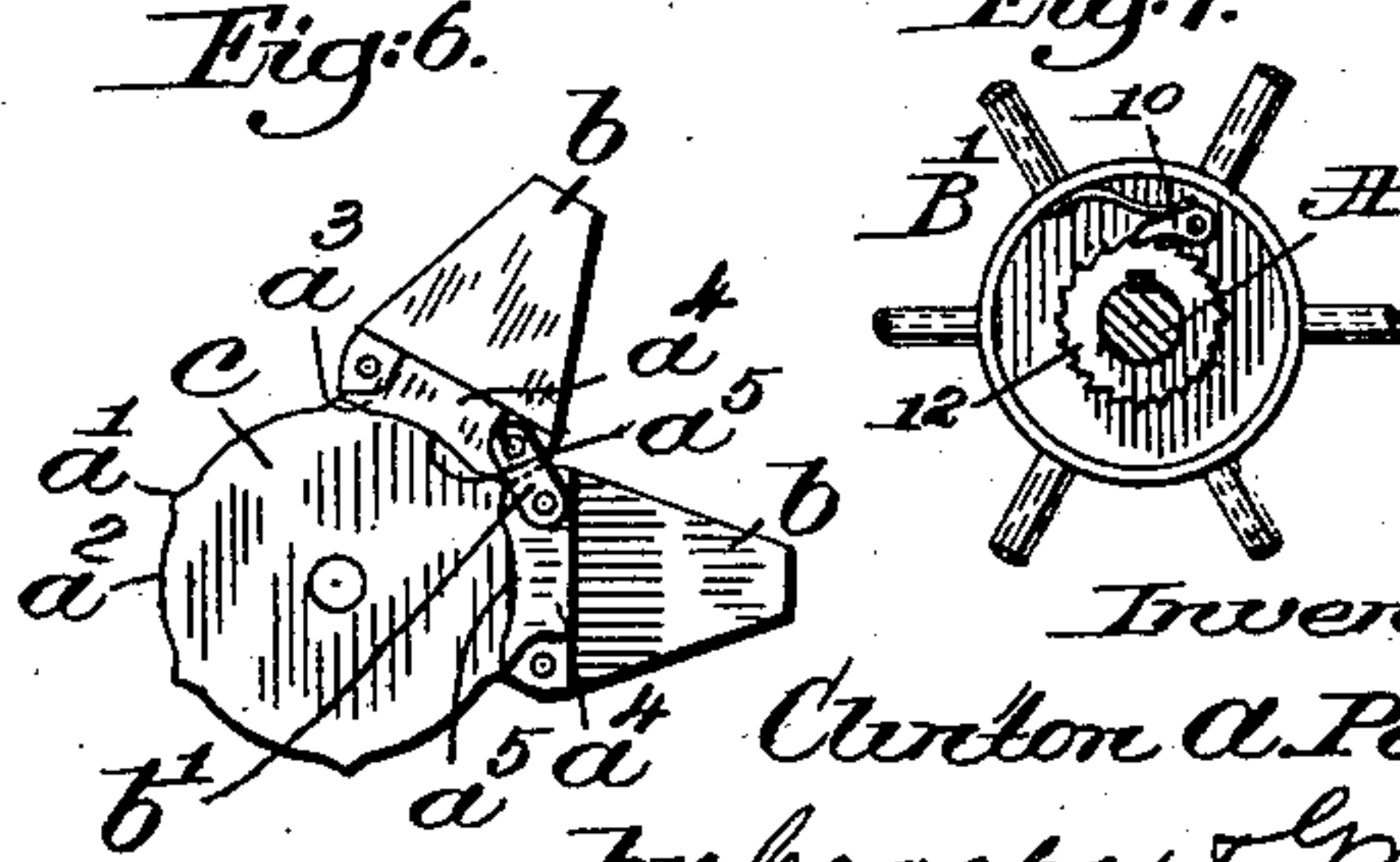
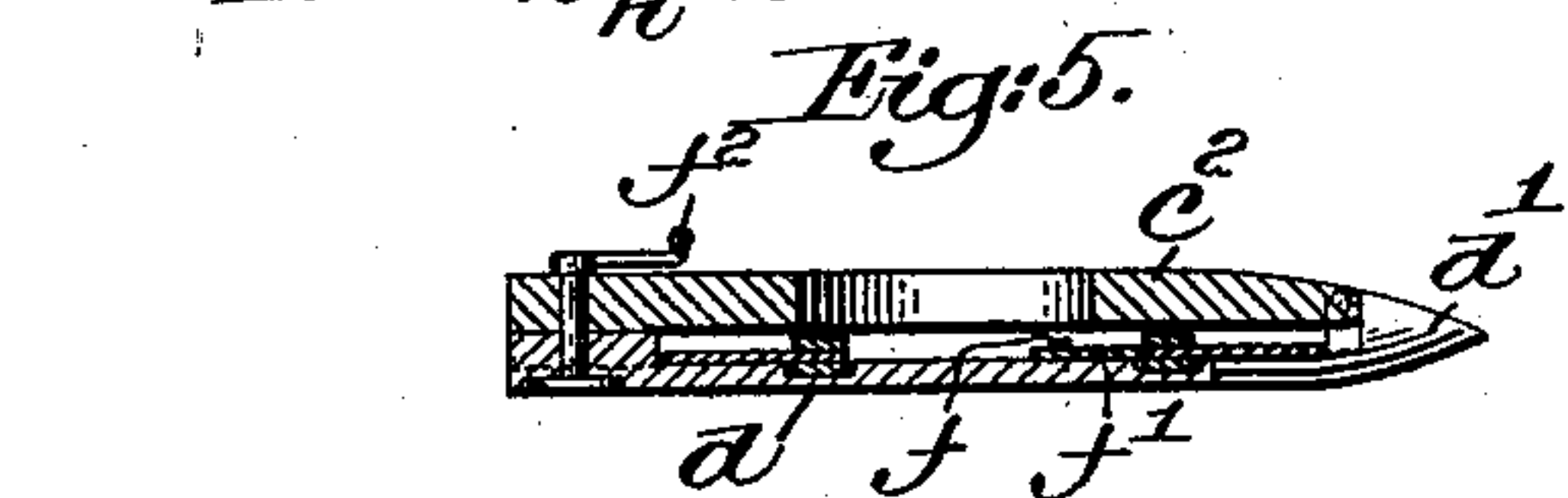
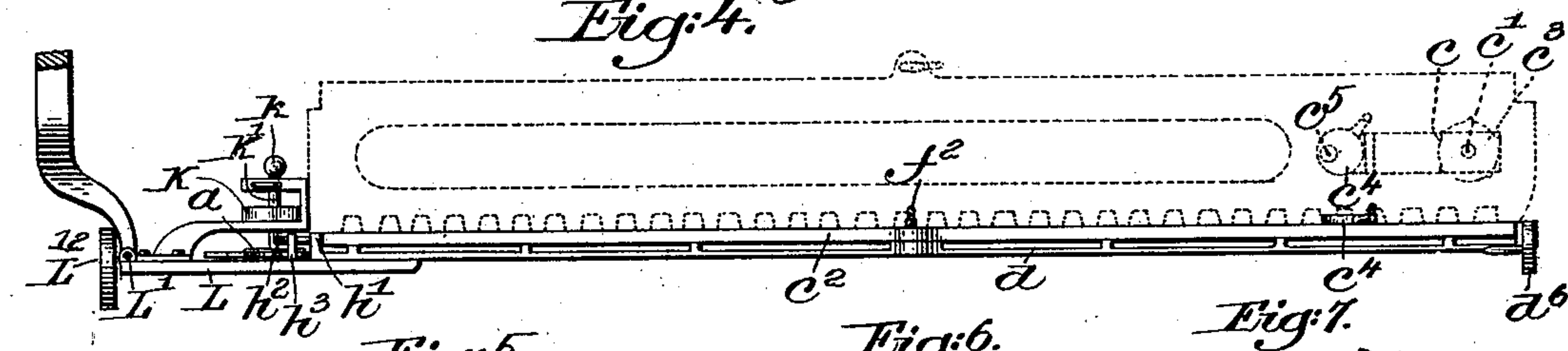
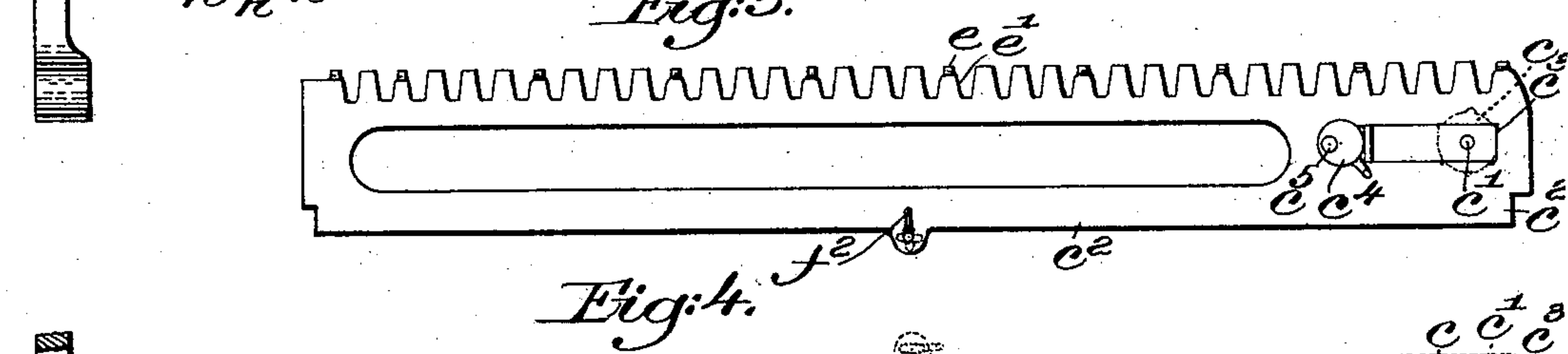
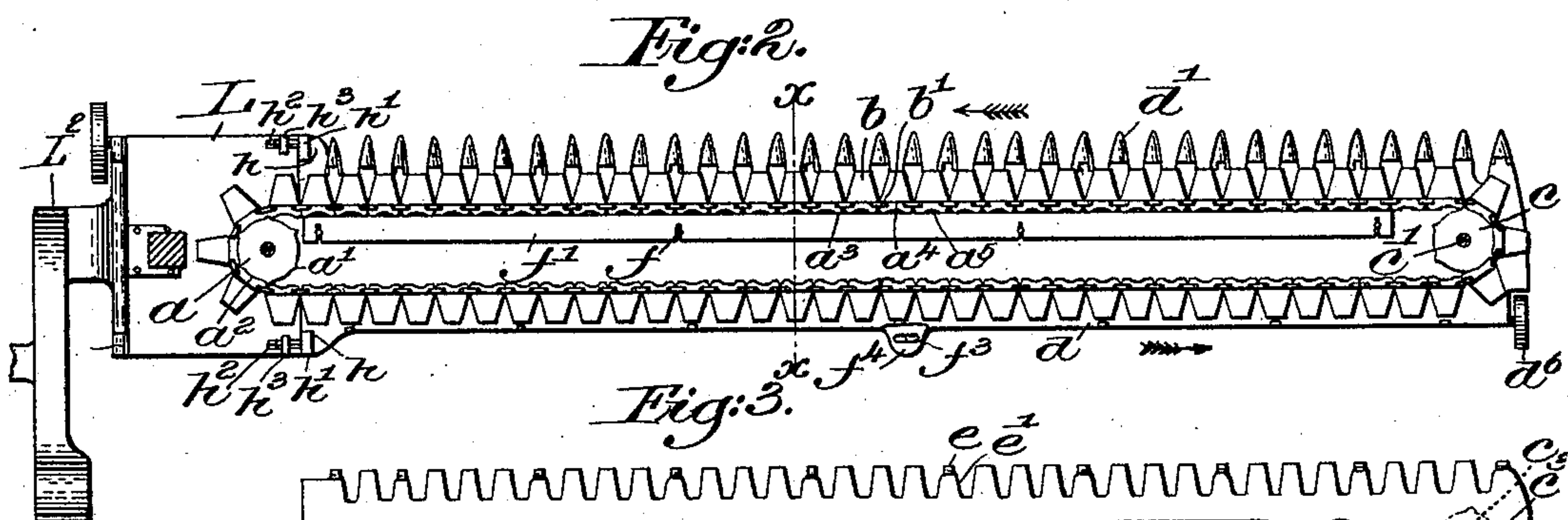
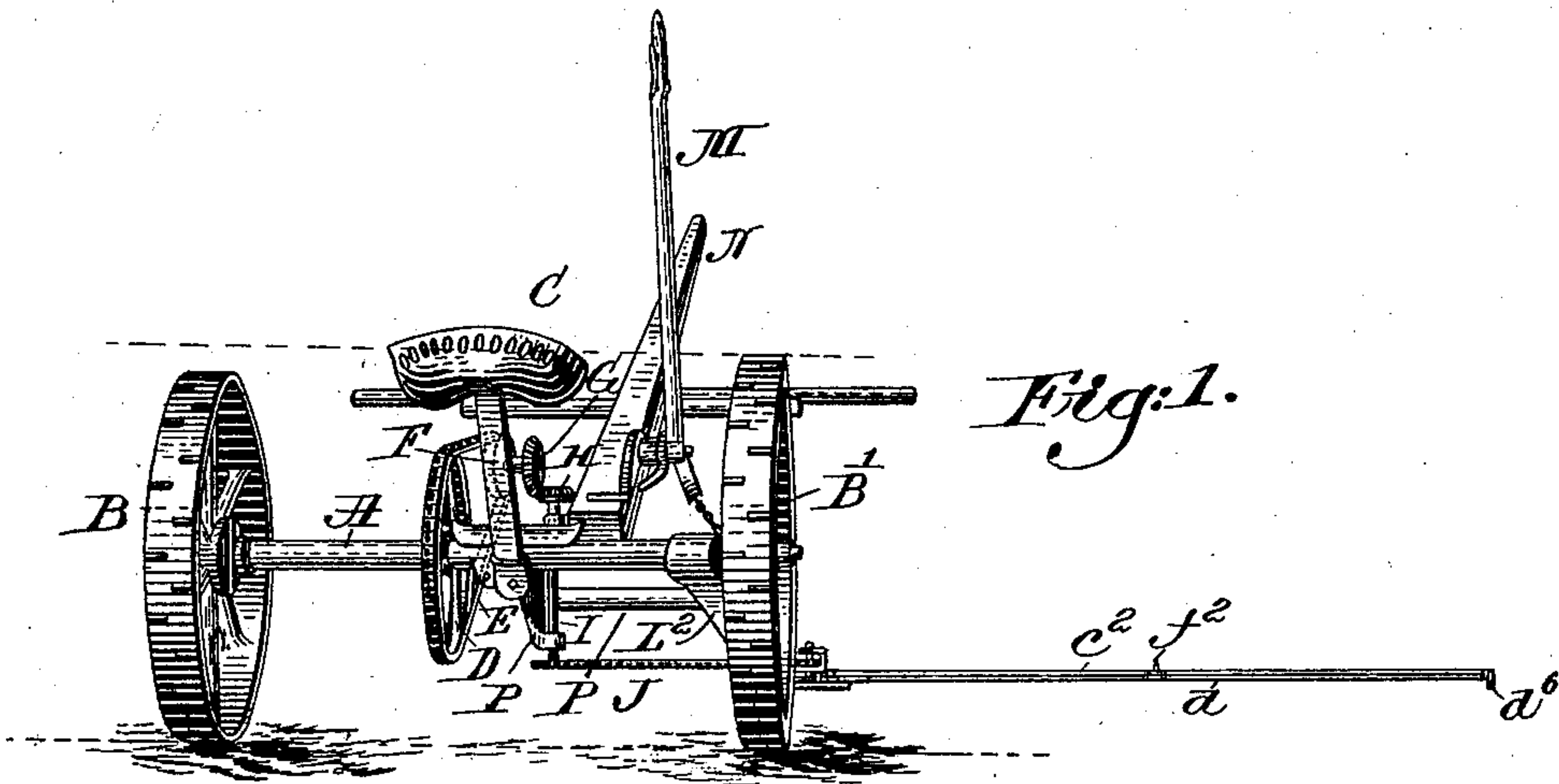


(No Model.)

C. A. PATTEN.
MOWING MACHINE.

No. 591,567.

Patented Oct. 12, 1897.



witnesses.
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UNITED STATES PATENT OFFICE.

CLINTON A. PATTEN, OF SOMERVILLE, MASSACHUSETTS.

MOWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 591,567, dated October 12, 1897.

Application filed October 7, 1896. Serial No. 608,084. (No model.)

To all whom it may concern:

Be it known that I, CLINTON A. PATTEN, of Somerville, county of Middlesex, State of Massachusetts, have invented an Improvement in Mowing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

10 This invention has for its object to improve that class of mowing-machines employing a chain of blades or knives.

In accordance with my invention I have so constructed the blade-holders and the sprockets which engage them to move the chain in a novel manner, whereby all tendency of the chain to slip in the sprockets is obviated and the chain has given to it a positive motion. I have also so mounted one of the sprocket-wheels that the distance between them may be instantly changed to permit of the removal of the chain and enable the blades thereof to be sharpened or the chain to be reversed and used the other side up as the bevel of the opposite cutting edges of the blades are reversed, so that said blades will cut when either side is up. The chain of blades works between an upper and lower plate, the lower plate carrying the points of the fingers, while the upper plate carries the upper parts of the fingers, the upper plate being so hinged or supported that it may be tipped over, preferably forward, and thus open the blade-space in the two-part fingers, exposing the chain and its blades, so that the chain may be removed readily. The wear of the blade-holders and sprockets in use may be compensated for, and to do this simply I have shown the finger-bar or under plate adjustably connected with the foot-plate to be described, so that the said under plate may be adjustable longitudinally to increase as needed the distance between the center of motion of the two sprockets. In order to hold the blades up to their work as the chain to which they are attached is being moved by the sprocket-wheels, I have provided the "under plate," so called, with an adjustable guide-bar, against which the blade-holders travel in the motion of the chain.

Figure 1 represents a mowing-machine em-

bodying my invention; Fig. 2, a top view of the chain of blades or knives, the under bar, and the sprocket-wheels for driving the chain, the shafts of the said sprocket-wheels being shown in section as cut off from the upper plate. Fig. 3 shows an upper side view of the upper plate removed. Fig. 4 shows a rear side view of the two plates constituting the cutter-bar, the dotted lines showing the upper plate turned up as for the removal of the chain. Fig. 5 is a section in the line x , Fig. 2. Fig. 6 is an enlarged detail showing the shape of one of the sprocket-wheels and the blade-holders fitting the same. Fig. 7 is a detail showing the method of connecting the hubs of the wheels with the axle.

The shaft A, the wheels B B', sprocket-wheel D, receiving the chain E, surrounding a second smaller sprocket-wheel F on a short shaft having a beveled gear G, engaging a bevel-gear H on a vertical shaft I, and the seat C are and may be all as usual in mowing-machines.

To the lower end of the shaft I, I attach a sprocket-wheel to engage and drive a chain J, embracing a sprocket-wheel K on a short shaft K', sustained in suitable bearings on the foot L, pivoted at L' on a suitable depending bracket L², sustained by the axle of the machine. The shaft K' is also provided with a sprocket-wheel a of peculiar shape, (see Fig. 2,) said sprocket-wheel and the like wheel c (shown in Fig. 6) having a series of open or obtuse angled sprocket-teeth a' , and between said sprocket-teeth convexities a^2 , the contiguous sides of the sprocket-teeth occupying positions in the same horizontal line, so that the straight heels a^3 of the blade-holders a^4 , to which are attached in usual manner by bolts or otherwise the blades b , may be seated on the contiguous sides of the sprocket-teeth, the convex portions a^2 of the sprocket-wheels entering concavities a^5 in the said blade-holders. The sprocket-wheels having the teeth and convex portions engaging the blade-holders having the seats and concavities described effect such a firm engagement that the sprocket-wheels in their rotation move the chain, composed of a plurality of these blade-holders united by suitable links b' , positively and without any opportunity to

slip. The chain, made up of a plurality of these blade-holders and blades, is driven by the sprocket-wheel a , and the said chain is passed about a second like-shaped sprocket-wheel c , sustained by a pivot c' , carried by the upper plate c^2 , to be described, the said pivot being mounted in a slide c^3 , with which coöperates an eccentric c^4 , the adjustment of the eccentric about its center c^5 causing the latter, acting on a suitable lug of the said slide, to either force the said sprocket-wheel c out into its normal position, as represented in Figs. 2 and 3, or permit it to fall or move back toward the sprocket-wheel a , in order that the chain may be readily removed from the sprocket-wheels and the blades be taken out from between the fingers of the finger-bar to be described.

The finger-bar is of peculiar construction—that is, it is composed of a lower and an upper plate. The lower plate d has at its front edge a series of projections d' , which constitute the main points of the fingers, and at suitable intervals some of these projections are made to constitute part of a hinge to receive ears e , connected to projections e' , made on the upper plate c^2 , so that the said upper plate may be turned over above the under plate and preferably in a forward direction, taking with it the sprocket-wheel c , the eccentric c^4 having been turned to slacken the chain, and thereafter by engaging the head or eye k of the shaft K' the said shaft, with the sprockets K and a , may be raised vertically, thus taking the sprocket a out from the chain, leaving it free to be removed. It will be noticed that the fingers are made in two parts—that is, d' and e' —and when the upper plate is turned over the parts e' go with it, uncovering the blades. To the under plate between the sprocket-wheels I have attached in an adjustable manner, by suitable set-screws f , a guide-bar f' , the same presenting a straight stiff face, against which may travel the rests a^3 of the blade-holders in the movement of the chain, the adjustment of this guide-bar compensating for wear between the parts and keeping the blades up to their work in a straight line without any chance of sagging. I have provided the upper plate with a suitable locking device f^2 , it being composed of a shaft having a sort of crank-like end to enter a notch f^3 in an ear f^4 of the lower plate.

I may use any suitable locking devices to keep the plates closed in normal position, and they may be of any suitable shape or kind. The lower plate d is shown as provided with a suitable wheel d^6 to run on the ground and the foot L with a wheel L^{12} . The lower plate has a suitable groove, as shown in Fig. 5, in which may travel the blade-holders, the said groove being somewhat larger than the thickness of the blade-holders, in order that they may travel freely and not bind in the movement of the chain. The lower plate d has at its inner end suitable projections h , having ears h' , said ears being provided with

screw-threads to receive the threads of an adjusting device h^2 , shown as a screw supported in suitable ears h^3 of the foot L , the rotation of the said screws or adjusting devices enabling the lower plate to be moved longitudinally away from the foot L , to thus take up any slack of the chain due to wear between it and the sprocket-wheels actuating it.

I have shown the right-hand wheel B' of the mowing-machine of greater diameter than the left-hand wheel B . Both these wheels are applied to the axle loosely, and each wheel carries one or more pawls 10, engaging a ratchet 12, having one or more teeth and fast on the axle; the axle turning in suitable bearings, shown in part at P . By making these two wheels of different diameter it will be obvious that the wheel of smaller diameter will rotate more frequently in going over the same distance than the wheel of larger diameter, and consequently when the machine is being drawn in a straight line the smaller left-hand wheel will be the driver of the shaft, but in case one turns the machine about to the left, so that the right-hand wheel moves over more surface of ground than the left-hand wheel, then the larger right-hand wheel becomes the driver of the axle, and vice versa. In this way, by making the left-hand wheel the driver in straight-line work, it is possible to make a substantially straight draft-machine. The upper and lower plate constitute a finger-bar.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A mowing-machine containing a series of blades made into a chain, each blade being connected to a blade-holder, having a concavity between its ends, and the blade-holders being pivotally connected together by links, combined with wheels embraced by the said chain, said wheels having sprocket-teeth to enter the spaces between the ends of adjacent blade-holders opposite said links, the convexed surfaces of said wheels lying between said teeth entering the concavities of the said blade-holders, substantially as described.

2. In a mowing-machine, an upper plate, a sprocket-wheel, a slide c^3 carrying said sprocket-wheel, a foot at the opposite end of said plate, a sprocket-wheel on said foot, an endless chain of blades, carried by said sprocket-wheels and an eccentric coöperating with said slide to change the position of the sprocket-wheel on said upper plate to effect the easy removal of the chain from the machine, substantially as described.

3. In a mowing-machine, an upper plate and a lower plate, a sprocket-wheel on said upper plate, a foot, a sprocket-wheel on said foot, an endless chain of blades carried by said sprocket-wheels, and adjusting-screws between said under plate and said foot, the movement of said screws adjusting said un-

der plate longitudinally with relation to said foot to compensate for wear of said chain, substantially as described.

4. In a mowing-machine, a lower plate having a series of projections constituting the under sides and points of fingers, combined with an upper plate having a series of projections constituting parts of the tops of said fingers, the projections of the upper plate being hinged to the projections of the lower plate to leave a space between them in which the cutter-blades may move, the overturning of the upper plate exposing said blades, substantially as described.

5. In a mowing-machine, an endless chain of blades, sprocket-wheels to move said chain, a lower plate having a series of projections constituting the under sides and points of fingers, combined with an upper plate having a series of projections constituting parts of the tops of said fingers, the projections of the upper plate being hinged to the projections of the lower plate to leave a space between them in which the cutter-blades may move, the overturning of the upper plate exposing said blades, substantially as described.

6. In a mowing-machine, a lower plate having a series of projections constituting the under sides and points of fingers, combined with an upper plate having a series of projections constituting parts of the tops of said fingers, the projections of the upper plate being hinged to the projections of the lower plate to leave a space between them in which the cutter-blades may move, the overturning of the upper plate exposing said blades, and

a locking device to retain the said plates closed, substantially as described.

7. In a mowing-machine, a series of blades, each connected to a blade-holder having its rear side concaved to leave two flat heels, and links joining said blade-holders, combined with two sprocket-wheels having teeth and convexities between said teeth, the teeth engaging the spaces between the ends of said blade-holders and opposite said links, the heels and concavities coming against the convexities of said sprocket-wheel, and an adjustable guide-bar f' against which the said heels travel, to operate, substantially as described.

8. A mowing-machine containing a series of blades made into a chain, each blade being connected to a blade-holder having a concavity between its ends and having its ends rounded, said blade-holders being pivotally united together by means of links, combined with wheels embraced by the said chain, said wheels having sprocket-teeth to enter the spaces between the ends of adjacent blade-holders and opposite the said links, the convex surfaces of said wheel between said teeth entering the concavities of the said blade-holders to operate, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CLINTON A. PATTEN.

Witnesses:

GEO. W. GREGORY,
LAURA T. MANIX.