No. 711,573. Patented Oct. 21, 1902.

W. P. KIDDER.

APPARATUS FOR FELLING TREES.

(Application filed May 1, 1901.)

(No Model.) 2 Sheets—Sheet 1.

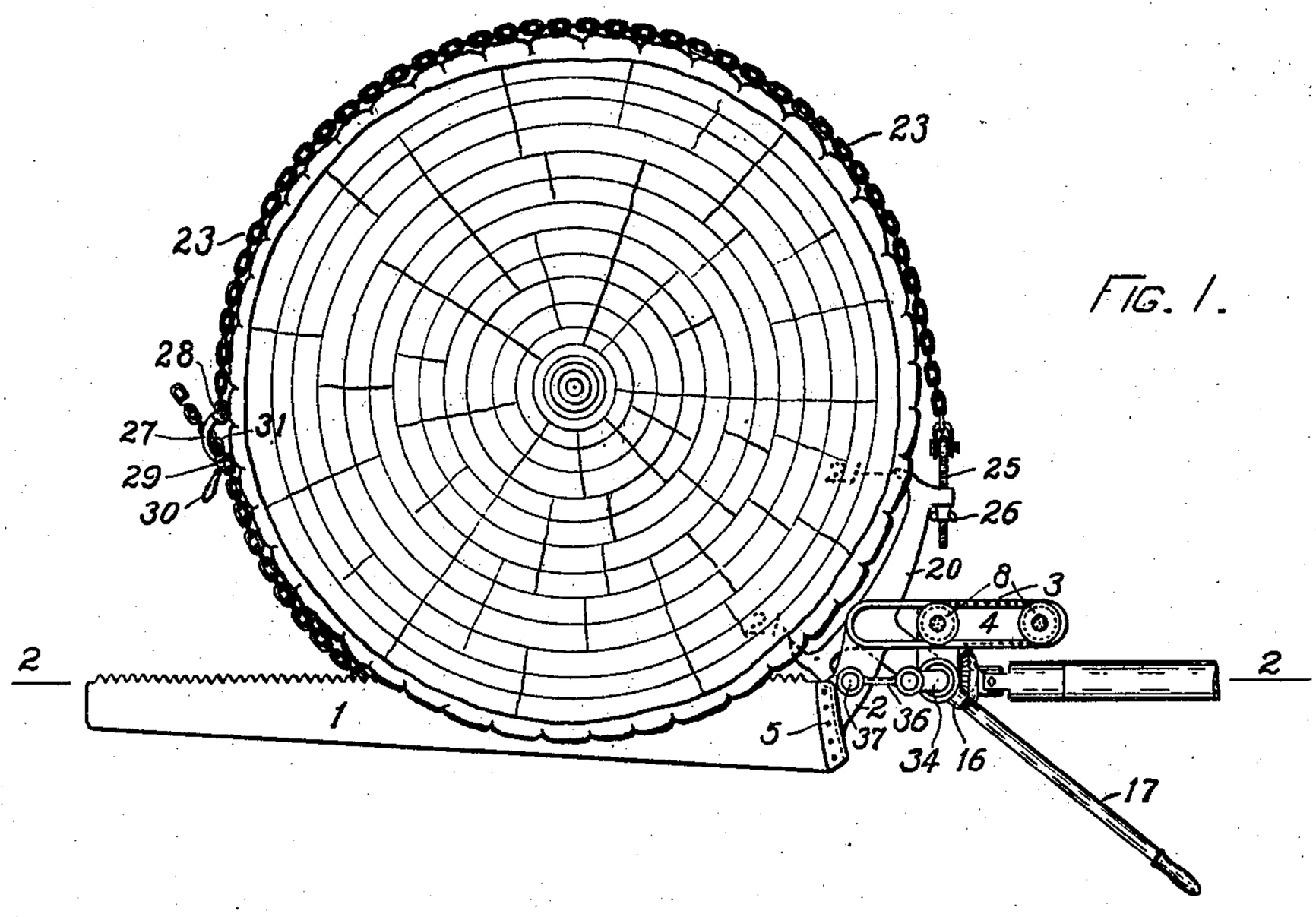

FIG. 1.

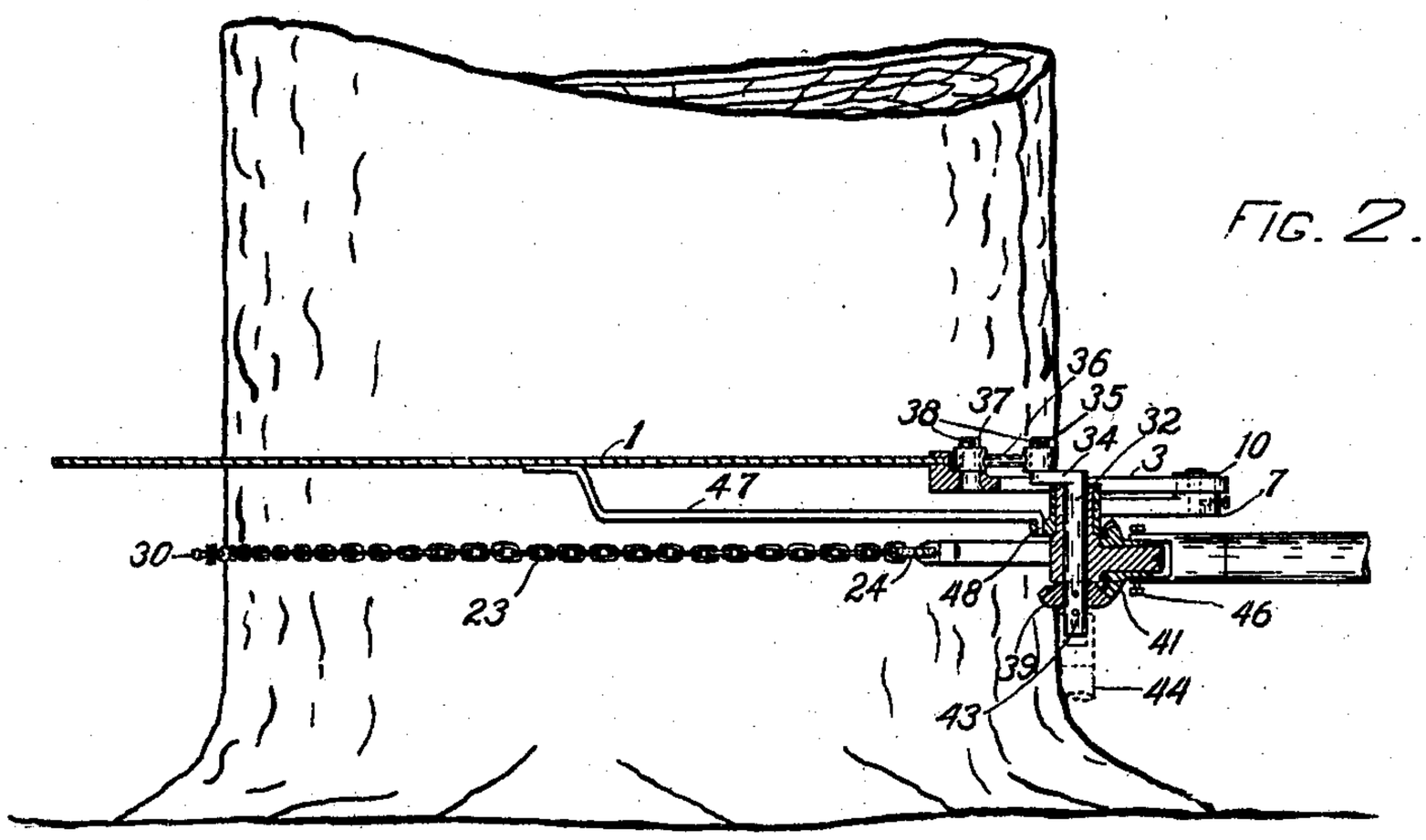

FIG. 2.

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FIG. 7.

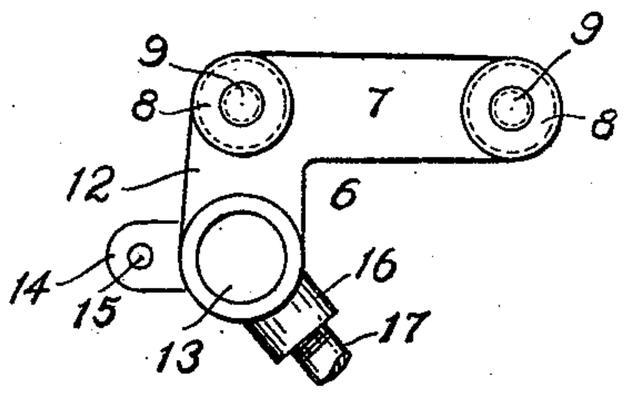
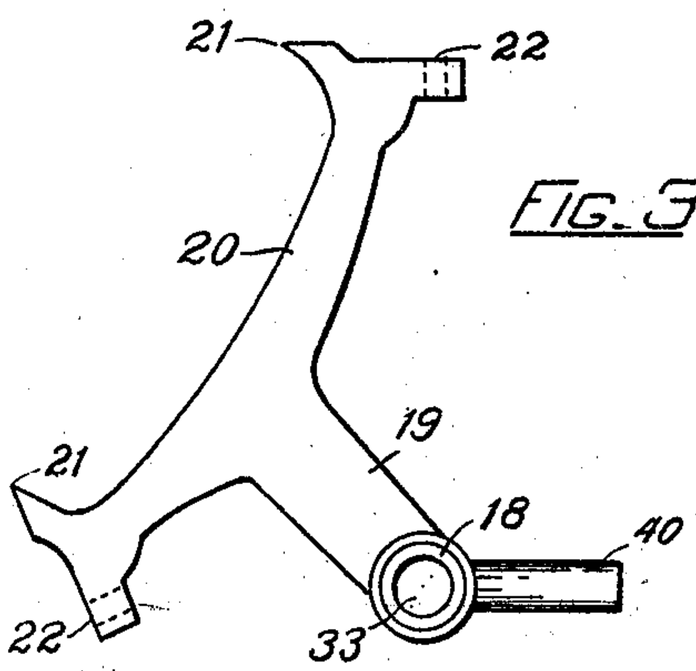


FIG. 3.



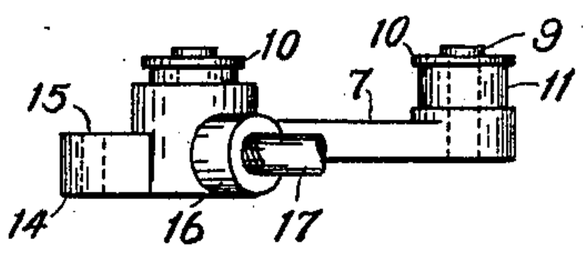


FIG. 8.

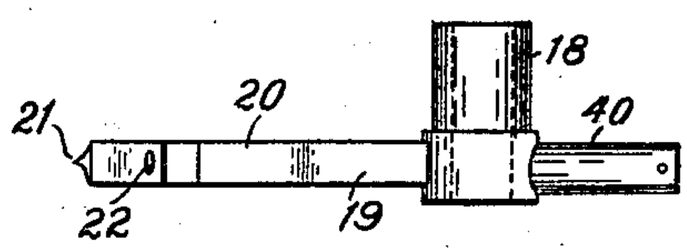


FIG. 4.

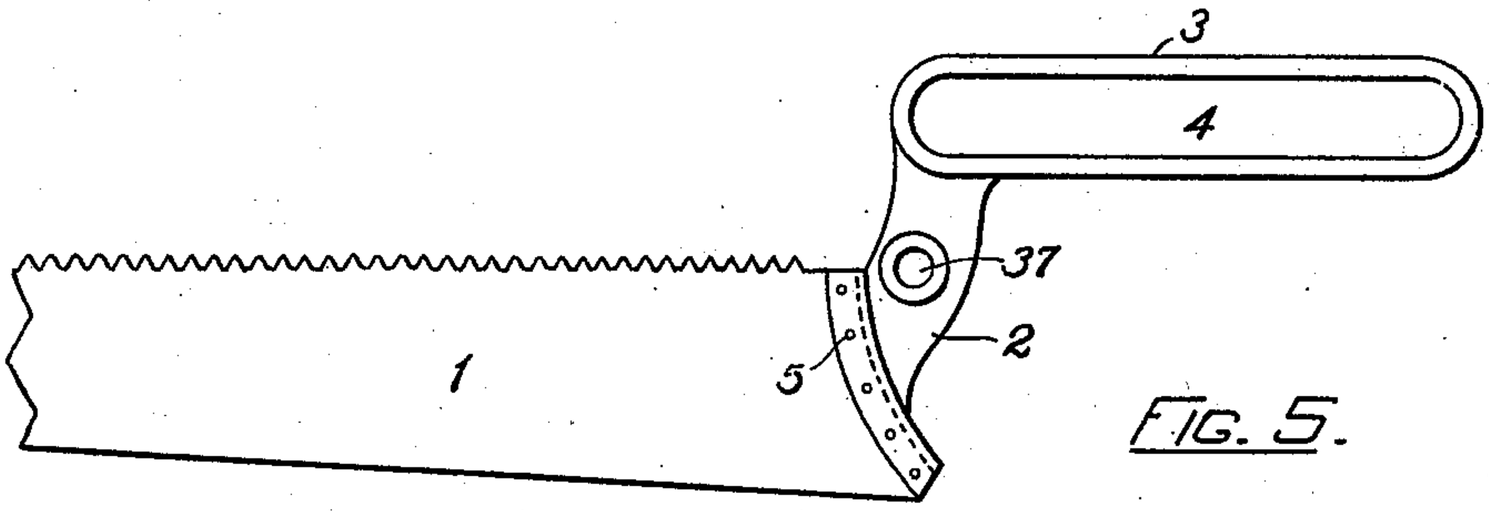


FIG. 5.

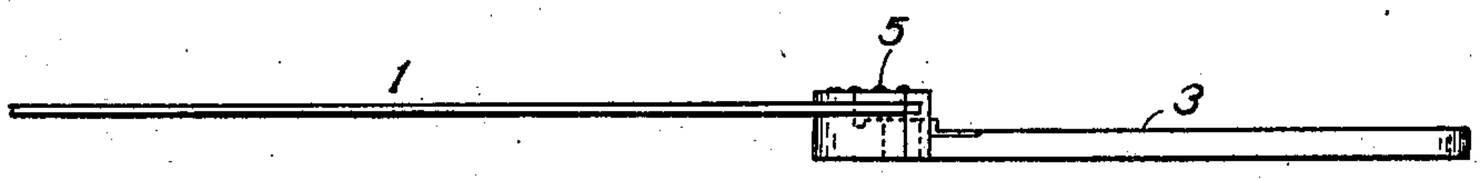


FIG. 6.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR FELLING TREES.

SPECIFICATION forming part of Letters Patent No. 711,573, dated October 21, 1902.

Application filed May 1, 1901. Serial No. 58,333. (No model.)

To all whom it may concern:

Be it known that I, WELLINGTON PARKER KIDDER, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Apparatus for Felling Trees, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a top plan view of my new apparatus operatively mounted in relation to a tree-trunk. Fig. 2 is a sectional elevation at line 2 2 of Fig. 1. Fig. 3 is a plan view of the trunk-engaging frame. Fig. 4 is a side elevation thereof. Fig. 5 is a side view of the saw and its fixed rearward lengthwise-slotted extension. Fig. 6 is an under edge view of what is shown in Fig. 5. Fig. 7 is a plan view of the swinging bracket, which supports the rearward slotted extension of the saw and which is in turn mounted on said frame. Fig. 8 is a side view of Fig. 7 of the swinging bracket.

The object of my invention is to make a portable apparatus for sawing down standing trees; and my invention comprises a saw combined with a saw-actuating mechanism and means for holding the apparatus in operative relation to the trunk of the tree which is to be felled.

In the drawings illustrating the principle of my invention and the best mode now known to me of applying that principle, 1 is a saw, and 2 a saw-carrier provided with a rearward extension 3, having a long open slot 4, the length of the slot being in the direction of the length of the saw. Saw 1 is rigidly attached to the saw-carrier 2 in any suitable manner, conveniently by forming the inner end of the saw-carrier with a groove in which the butt-end of the saw is mounted and secured by rivets 5.

Saw-carrier 2 is reciprocatively mounted on a swinging bracket 6, which has an arm 7 provided with a pair of antifriction-rollers 8, journaled on the supports 9, which project laterally on arms 7 on the swinging bracket. These arms are provided with circumferential flanges 10 at their outer ends.

The body portions 11 of the rollers are a loose but close fit in the slot 4 of the saw-carrier 2, and when the rollers are mounted in the slot 4 and secured in place by their journals 9 the flanges 10 confine the saw-carrier in place between the inner sides of the flanges and opposed surfaces of saw-carrier 2. The saw-carrier 2 is thus made freely movable on arm 7 of the swinging bracket, which is provided with two or more rollers 8, so that the rearward extension of the saw-carrier moves in line with the arm 7 of the swinging bracket 6 when the apparatus is in use. Swinging bracket 6 has another arm 12, which is preferably at right angles to the arm 7, which arm 12 is provided at its outer end with a boss-receiving opening 13, with a lug 14 having a hole 15 through it, and with a handle-socket 16, adapted to receive when desired the handle-bar 17.

The boss-receiving opening 13 receives and is loosely fitted on the boss 18, which projects laterally from the upper side of the arm 19 of the trunk-engaging frame 20, which is provided at its opposite ends with spurs 21, which are adapted to be driven through the bark and into the trunk of the tree to aid in supporting the frame 20 in any desired distance from the ground. Spurs 21 21 project from that side of frame 20 which is opposite said arm 19. Frame 20 is also provided at its opposite end portions, preferably back of the spurs 21, with holes 22 22, each hole 22 being of a size to permit the ready attachment on the opposite side of a chain 23, which encircles the tree and binds the supporting-frame 20 in place. One end of the chain is conveniently connected with frame 20 by hook 24, while the other end of the chain is preferably attached to a spindle 25, which passes through the other hole 22 and is provided with threads and a nut 26, so that the chain may be tightened by turning the nut, if so desired. This construction is only one of many convenient forms of take-ups, any appropriate one of which may be used.

Preferably chain 23 comprises between its ends a device by manipulation of which the chain and felling apparatus may be quickly removed from the tree when it is about to fall. Such a device may be properly called a "relieving" device, and in its present form

comprises a stout bow 27, one end of which is connected to the chain at 28 and to the other end of bow 27 by a pintle 29, to which there is attached a right-angled handle or lever 30, the inner end of which projects from the pintle 29 part way of the length of the bow and has its inner end formed with an open hook 31, into which a chain-loop may be put.

When the handle 30 is moved rearwardly as far as it will go, the releasing device forms a part of the chain 23.

When the tree is about to fall and it is desired to speedily remove the apparatus from the tree, the operator will speedily pull the handle 30 forward, carrying the fixed end of the bow 27 outwardly from the tree and moving the hook 31 in such position that the chain may be instantly released therefrom.

Upon the boss 18 of the frame 20, which boss will ordinarily stand vertically, the swinging bracket 6 is loosely mounted, boss 18 being received with a loose fit in the boss-receiving hole 13 through the arm 12 of the swinging bracket 6. Thus when the rollers 8 are in the slot 4 of the saw-carrier 2 the frame 20, swinging bracket 6, and saw-carrier 2 are operatively assembled. Said parts are held together by a crank-shaft 32, which passes through the crank-shaft hole 33 in the boss 18. Crank-shaft 32 has a crank-arm 34, carrying a link-receiving stud 35, on which a link 36 is loosely mounted. The other end on the link 36 is also loosely mounted on a stud 37, which projects laterally from saw-carrier 2 and is located between the saw end of the rearward extension 3 and the butt-end of the saw. Pins or other fastening devices 38 hold the link 36 in place on the studs or journals 35 and 37. The other end of crank-shaft 32 is provided with a fixed beveled gear 39, which bears against the inner side of the arm 19 of supporting-frame 20. Thus the crank-shaft is operatively held in place and holds the supporting-frame, swinging bracket, and saw-carrier together.

It will be seen that when crank-shaft 32 is rotated the crank-pin 35, by means of the link 36, coöperating with the journal 37 of the saw-carrier, will operate the saw and that the rollers 8 8, then working in the open slot 4 of the rearward extension of guide-bracket 3 of the saw-carrier, will compel the saw to be reciprocated endwise.

Arm 19 of the supporting-frame 20 is preferably provided with an extension 40, which extends rearwardly of the boss 18 and is adapted to receive a beveled gear 41, which meshes with the beveled gear 39. The beveled gear 41 is a mere auxiliary and may be dispensed with, if desired.

Of course a hand-crank may be provided for the beveled gear 39, which is fixed on the crank-shaft, if so desired, so that it is not necessary to use either of the gears 39 or 41; but as I intend my apparatus to be used mainly in connection with a suitable power-motor I herein show the intermeshing beveled gears 39 and 41, whereby it is evident that if the auxiliary beveled gear 41 be actuated by power the other gear 39 will rotate the crank-shaft; but in practice I attach rigidly to the outer end of the crank-shaft by a suitable spline and clamping-screw 43 a flexible shaft 44, which may be of any desired operative length and led from its driving-motor in a manner too well known to require description.

Generally the apparatus may be mounted at a little distance above the ground; but of course the apparatus may be mounted far above the ground—as, for instance, when it is desired to cut off the top of a standing tree—and the flexible shaft is in either event in most convenient form. The power-transmitting shaft may be used in connection with my new apparatus, if desired.

In some instances it may be advisable to connect the flexible shaft 44 directly to the beveled gear 41, and this may be done by the clamping-screw 46. In this case the beveled gear 41 will rotate crank-shaft 32 through beveled gear 39.

Frequently during the operation of the apparatus it is desirable to force the serrated edge of the saw inward, and then the handle or presser bar 17 may be pulled toward the saw, whereby swinging bracket 6 is turned on the boss 18 of the supporting-frame 20, thus pulling the rear end of the arm 7 and the rear end of the guide-bracket 3 toward the operator and forcing the serrated edge of the saw inwardly toward the heart of the tree.

As the saws used in my apparatus will preferably be of suitable length and as when they are used their flat sides will be horizontal, it is very desirable to provide means for supporting the saw part way between its ends, so that its free end will not sag. Consequently I prefer to mount the saw-support 47, with its tang 48, in the hole 15 of lug 14 of the swinging carrier 6, the saw-carrier 47 extending toward the front end of the saw and having an upturned portion end on which the saw rests until it has entered far enough into the tree to be self-supporting. Tang 48 is loose in the hole.

The advantages of my apparatus are that trees may be rapidly felled without the loss heretofore due to chopping, that the trees may be cut off much closer to the ground than choppers ordinarily, according to common practice, chop down the trees, thus saving much of the stumps heretofore left by hand-choppers, and that the apparatus can be readily moved about in the forest for felling the trees.

It will be readily understood that the main mechanical factors of my apparatus, as well as the constructional details thereof, may be readapted by mechanics without departure from my invention, and I desire to be understood as claiming it in the broadest legally permissible manner.

What I claim is—

1. In apparatus for felling trees, the combination of a supporting-frame; means for binding the supporting-frame on the tree-trunk; a swinging bracket pivotally mounted on said supporting-frame; a saw-carrier mounted on said swinging bracket and having a reciprocatory movement thereon; a crank-shaft in operative relation to said parts; means for operatively connecting the saw-carrier with said crank-shaft; and means for rotating said crank-shaft.

2. In apparatus for felling trees, the combination of a supporting-frame having tree-engaging spurs; a chain for binding the frame to the tree-trunk, and provided between its ends with a releasing device; a chain-releasing device; said frame having a rearwardly-extending arm on which the swinging bracket is pivotally mounted; a swinging bracket mounted on said arm; said swinging bracket having an angular arm provided with a plurality of antifriction-rollers and saw-carrier having a rearward extension formed with an open slot in which said rollers are mounted.

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

WELLINGTON PARKER KIDDER.

Witnesses:
M. E. COVENEY,
E. A. ALLEN.