

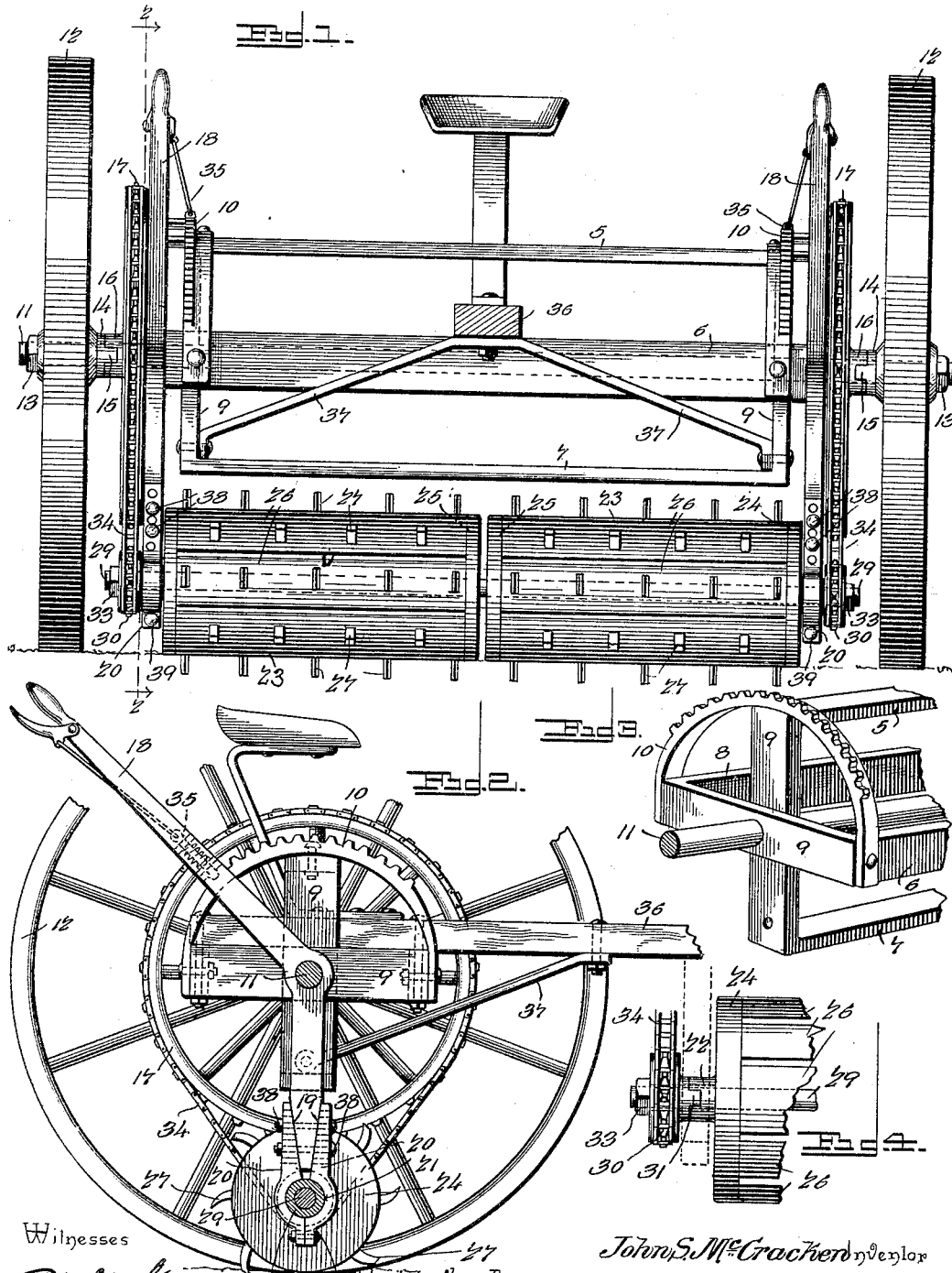
No. 647,576.

Patented Apr. 17, 1900.

J. S. McCracken.
EARTH CRUSHER.

(Application filed Sept. 20, 1899.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN S. McCracken, OF TRENTON, MISSOURI.

EARTH-CRUSHER.

SPECIFICATION forming part of Letters Patent No. 647,576, dated April 17, 1900.

Application filed September 20, 1899. Serial No. 731,105. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. McCracken, a citizen of the United States, residing at Trenton, in the county of Grundy and State of Missouri, have invented a new and useful Earth-Crusher, of which the following is a specification.

This invention relates to earth-crushers, and more particularly to that class comprising a roll or rollers of drum shape and mounted upon a shaft in such a position as to engage the surface of the earth, the drums being supported in hangers carried by a suitable frame, the power for rotating the drum being secured from the supporting-wheels of the frame.

The object of the invention is to provide an extremely simple and cheap construction which is not liable to disorder and in which the drum will be positively rotated and may be thrown into and out of operative relation to their rotating means. The construction has also for its object to provide means for raising and lowering the rollers, for adjusting the bearings of the rollers to compensate for wear, and also to adjust them with respect to the hangers to compensate for wearing or stretching of the sprocket-chains which are employed to rotate them. In this construction is also provided an extremely simple construction of frame in which the bracing means forms also a segment for the engagement of the pawls carried by levers which are operated to raise and lower the rollers.

In the drawings forming a portion of this specification, and in which similar numerals of reference designate like and corresponding parts in the several views, Figure 1 is a front elevation showing the complete crusher, the tongue being in section and the rollers lying in their operative positions. Fig. 2 is a section on line 2 2 of Fig. 1. Fig. 3 is a detail perspective of the end of the frame of the machine. Fig. 4 is a detail elevation showing one end of a crushing roller or drum and the means for securing its operating-sprocket thereto.

Referring now to the drawings, the crusher comprises a frame consisting of four equally-spaced beams 5, 6, 7, and 8, disposed mutually opposite in pairs, the elements of each pair having their ends connected through the

medium of cross-pieces 9, preferably formed integral with their respective beams. The cross-pieces 9 of one pair of beams lie normally horizontal, and to the ends of the cross-pieces are fixed the ends of an upwardly-curved notched segment 10 for a purpose which will be presently described.

Passed centrally through the end cross-pieces 9 and concentric with the segment 10 is a supporting-shaft 11, upon the outer ends of which are loosely-disposed ground-wheels 12, held against outward displacement by means of the usual securing-nuts 13.

The hubs 14 of the wheels 12 are provided with clutched faces upon their inner ends, as shown at 15, which are permanently engaged with similar faces 16 upon the outer ends of the hubs of sprocket-wheels 17, also mounted loosely upon the shaft 11 and between the wheels 12. Between the sprockets 17 and the ends of the frame above described are loosely-mounted levers 18, which extend above and below the shaft 11, the upwardly and downwardly extending portions of each lever lying at an angle, as shown.

The lower end of each lever 18 is tapered, as shown at 19, and upon the tapered portions are clamped correspondingly-tapered box-sections 20, which cooperate to form a bearing 21 for a sleeve 22, fixed to the head of an adjacent crushing-roll 23. These crushing-rolls, as shown, consist each of two heads 24 and 25, upon which are secured slats 26, provided with teeth 27, which are of the usual construction and the outer ends of which are curved in a direction opposite to that of the rotation of the rollers. In the drawings there are shown two of these rollers, the outer ends of which are journaled in the bearings 21 through the medium of the sleeves 22, as above described, and the inner ends, or mutually-adjacent ends, of the rollers are loosely disposed upon a shaft 29, passed through the sleeves 22 and projecting therebeyond. Upon these projecting ends of the shaft 29 are disposed sprockets 30, having clutch-faces 31 at their inner ends engaging similar faces upon the adjacent sleeves 22, the sprockets being held to maintain engagement of the clutch-faces through the medium of securing-nuts 33. Connecting the sprockets 30 with the sprockets 17 are chains 34. Thus it will be seen that

inasmuch as the levers 18 and the sprockets 17 are mounted concentrically or upon the same axis the levers may be operated to swing the rollers, and thus to raise and lower them, without tightening or loosening the sprocket-chains, and in order to hold the levers at different points of their adjustment they are provided with the usual spring-pawls 35, which are disposed to engage the notches of the adjacent segments 10.

The vertical cross-pieces 9 are braced to the under side of the tongue 36, through the medium of upwardly-converging braces 37, and this tongue is disposed upon and secured to the beams 6 and 8, mutually connected by means of a horizontal cross-piece 9. By means of this construction the frame is held against rotation when the levers are operated to adjust the positions of the rolls.

With the construction shown for supporting the sleeves 22 it will be seen that the box elements 20 may be adjusted vertically with respect to the tapered portions 19 of the levers and may be held in their various positions by means of the securing-bolts 38, passed through perforations in the box and through corresponding perforations in the tapered ends of the levers, as indicated in Figs. 1 and 2 of the drawings. Also by means of the clamping-bolt 39, which holds the lower ends of the box members together, these members may be adjusted with respect to each other to compensate for wear of the bearings and for displacement of the members with respect to each other as they are shifted vertically.

As shown in Fig. 2 of the drawings, the teeth 27 on the rollers are curved in the direction rearwardly of the direction of rotation, and these teeth are revolved about the axes of the rollers at a peripheral speed greater than that of the supporting-wheel 12. The result is that as the crusher is drawn over the earth the teeth are taken downwardly and then drawn substantially longitudinally from the earth, with the result of finely pulverizing the soil. With this construction, moreover, a plow need not be used to originally plow the soil when wheat and similar crops are to be raised; but instead the knives or teeth 27 will enter the earth and will treat it to an extent sufficient, thus omitting the usual expensive and slow process of plowing. Moreover, with the direction of curvature of the teeth shown, all vegetation is taken downwardly and under the surface.

What is claimed is—

1. An earth-crusher, comprising a shaft, a frame loosely mounted upon the shaft and

having a tongue fixed thereto, wheels mounted loosely upon the shaft, sprockets upon the shaft and fixed to rotate with the wheel, levers pivoted upon the shaft, bearings carried by the levers, rollers having sleeves disposed in said bearings, a shaft passed loosely through the rollers and their sleeves, sprockets mounted loosely upon the last-named shaft and fixed to the sleeves, chains connecting the corresponding first and last named sprockets, and means for holding the levers at various points of their pivotal movements.

2. An earth-crusher, comprising a shaft, a frame mounted loosely upon the shaft and including parallel beams disposed oppositely in pairs, the ends of each pair being connected, a tongue fixed to one pair of beams, a notched segment fixed to the connections of the beams at each end of the frame, levers pivotally mounted upon the shaft and having pawls adapted for engagement with the segments, crushing-rollers mounted in said levers, supporting-wheels for the shaft, and means for transferring motion from the supporting-wheels to the rollers.

3. In an earth-crusher, the combination with a shaft having supporting-wheels mounted loosely thereon, of a frame mounted loosely upon the shaft and having a tongue fixed thereto, levers pivoted upon the shaft, boxes carried by the levers and adjustable with respect thereto, sprockets mounted upon the shaft and fixed to rotate with the wheels, drums rotatably mounted in the bearings upon the levers, sprockets fixed to the drums, and chains connecting the sprockets of the drums with the corresponding sprockets of the shaft.

4. The combination with a shaft having a sprocket thereon, of a hanger mounted concentric with the shaft and having a tapered end, box elements having inner tapered faces adapted to lie upon the tapered end of the hanger, a shaft journaled in the box, a sprocket mounted upon the shaft, a chain connecting the first and second sprockets, the box members being adapted for adjustment longitudinally of the tapered portion of the hanger, and means for holding the box members at different points of their adjustment.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN S. McCRACKEN.

Witnesses:

J. ROSS COLHOUN,
M. PERRY HAHN.