C. C. REED.

ROTARY PLOWING CYLINDER.

APPLICATION FILED NOV. 15, 1916. RENEWED JAN. 8, 1919.

1,318,920. Patented Oct. 14, 1919.

3 SHEETS—SHEET 1.

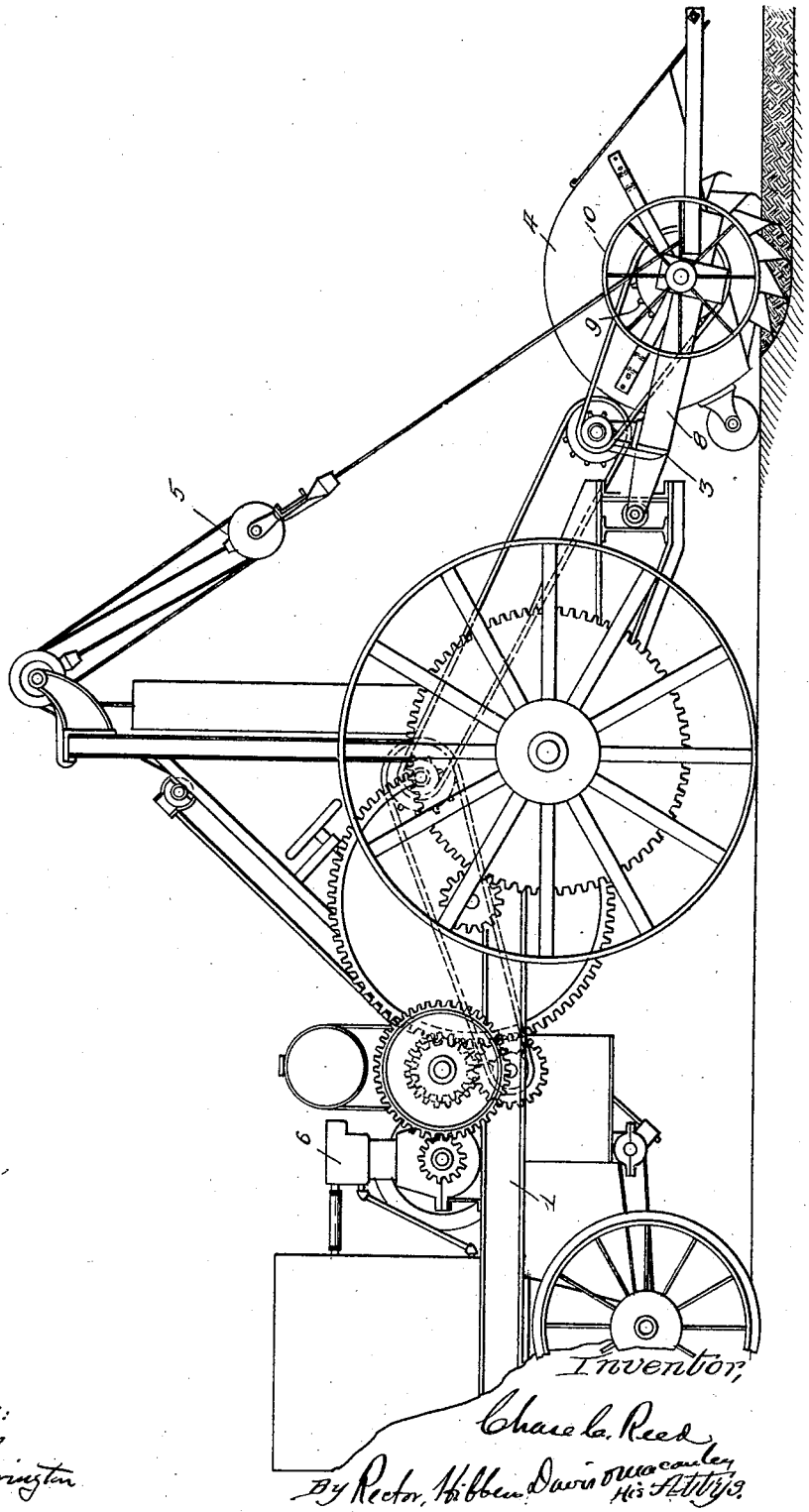


Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 2.

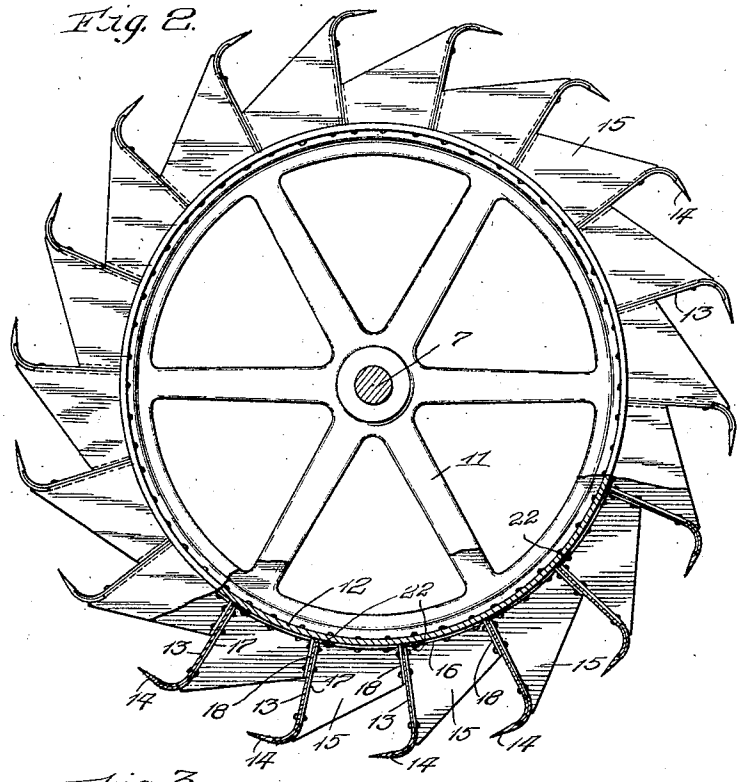
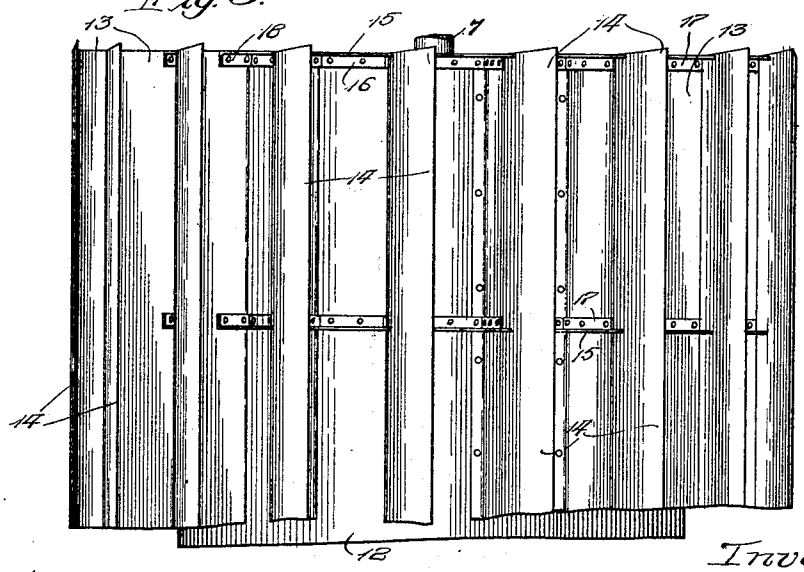


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4.

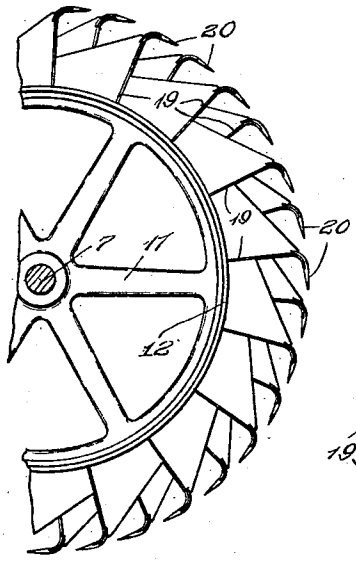


Fig. 5.

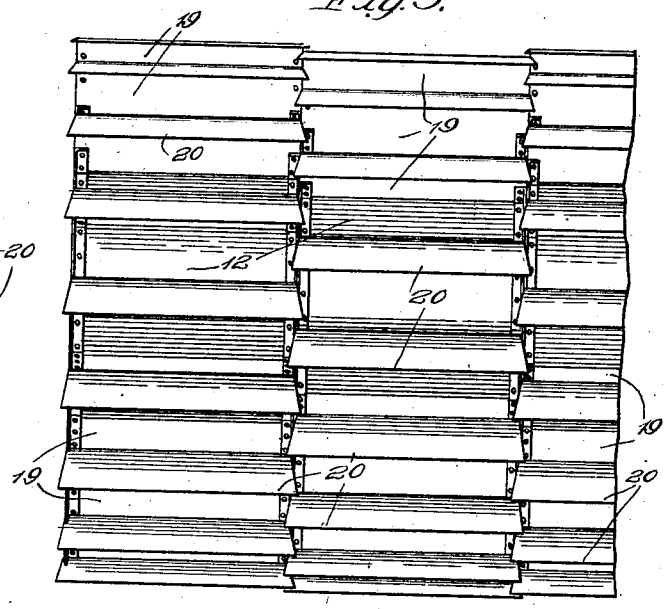


Fig. 6.

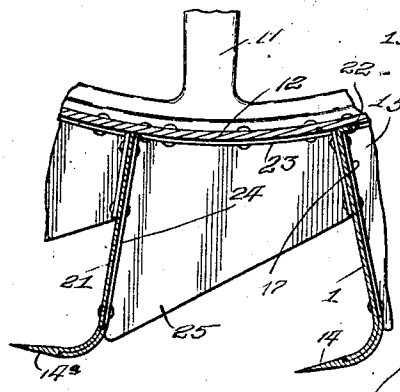
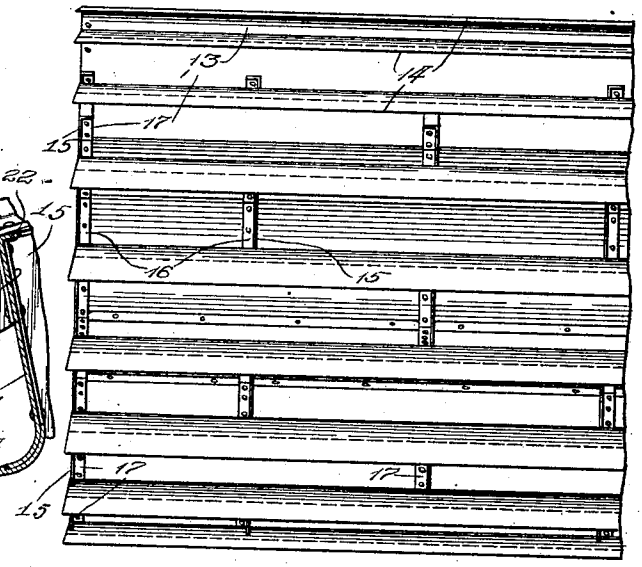


Fig. 7.



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UNITED STATES PATENT OFFICE.

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ROTARY PLOWING-CYLINDER.

1,318,920. Specification of Letters Patent. Patented Oct. 14, 1919.

Application filed November 15, 1916, Serial No. 131,544. Renewed January 8, 1919. Serial No. 270,214.

To all whom it may concern:

Be it known that I, CHASE C. REED, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Rotary Plowing-Cylinders, of which the following is a specification.

My invention relates to plowing machines of the type in which a rotary cutter or plow mounted in a traveling frame is rotated by suitable motive power to perform the plowing of the ground, and has particular reference to the construction of the cutting element itself. The object of my invention is the construction of a simple, strong and effective cutter, particularly well designed and adapted to accomplish the work for which it is to be used, and having the novel and useful construction and arrangement of parts which is pointed out in the appended claims.

In the accompanying drawings Figure 1 is a side view of a plowing machine in which my invention is embodied; Fig. 2 is an end view, partly in section, of the plow or cutter; Fig. 3 is a plan view of a portion of the same; Fig. 4 is an end view of a modified form of cutter; Fig. 5 is a side view of one end of such modified form; Fig. 6 is a fragmentary view on a larger scale than Fig. 2 and showing a modified form of attachment of the cutting blade to the back plate of the cutter; and Fig. 7 is a fragmentary side view showing a staggered relation of the supporting plates between the blades.

The same letters of reference indicate the same parts in all of the figures of the drawings.

By way of illustration merely, and in order to show the manner in which a cutter constructed according to my invention is designed to be used, I have in Fig. 1 illustrated a plowing machine of which my novel cutter forms a part. It is unnecessary here to explain the construction of the machine further than to say that it includes a wheeled main frame 1, a plow frame 3 flexibly connected to the main frame carrying a baffling shield 4 and supporting the cutter which will shortly be described in detail, a hoisting and counterbalancing mechanism 5 connected to the plow frame, and a gasolene engine 6 mounted on the main frame and arranged to rotate the cutter rapidly and also arranged to drive the traction wheels of the plow and operate the hoist through suitable connections which it is unnecessary to describe. The shaft 7 of the cutter it will be understood is journaled in the side bars 8 of the frame 3, and is provided with suitable gears 9 through which it is rotated, and in the machine illustrated gage wheels 10 are provided to govern the depth of cut of the plow.

Coming now to the novel cutter structure which constitutes my present invention, the shaft 7 of the cutter through spider frames 11 supports a cylindrical shell 12 which carries a series of longitudinally arranged back plates 13 equipped with cutter blades 14, which are secured to it in any desired or suitable manner, either removably, as by means of screws or bolts, or irremovably, by welding by rivets, which must be destroyed in order to remove the blade. While it is obvious that the cutter blades might be formed integral with the back plates 13, yet it is desirable to construct the parts as above described, in order that a broken or defective blade may be removed and replaced without disturbing other parts of the plow structure, and with the construction shown this may readily be done, even though the blade be riveted to the back plate. In the form shown in Fig. 2, the back plates 13 extend the entire length of the shell. Preferably the blades 14 are shouldered near their edges in order to form a seat to accommodate the forward edges of such back plates upon which they are seated in the manner shown in Fig. 2. The back plates are secured to the shell 12 by means of spacing plates 15, which in the form of my invention shown in said Fig. 2 are arranged in rings of such plates in alinement with each other. As shown in the figure referred to, each plate is formed with a curved flange 16 at its base, by means of which it is riveted to the shell, and a front flange 17 and rear flange 18 which are respectively riveted to the back plate 13 which lies in front of it and the back plate lying to the rear. Preferably, to give maximum strength, the back plates 13 are formed with flanges 22 riveted to the shell 12, the base flanges 16 and front flange 17 of the spacing plate 15 being cut away to receive such flange 22, see Fig. 2 and the right hand plate in Fig. 6. The outer end of the flange 17 abuts against the rear of the blade 14, while the front outer corner

of the plate 15 fits against the rear of such blade, thus giving the blade support and holding it in position. Since the spacing plates 15 are arranged in alinement with each other extending in rings entirely around the cylinder or shell 12, they brace each other in the same manner as a solid or integral ring would, and in effect form continuous solid rings intersecting the back plates and cutter blades and dividing the space between them into a series of buckets.

In Fig. 6 I have shown at the left hand side, a form of construction in which the back plate 21 abuts directly against the shell 12, and the front flange 24 of the spacing plate 25 also abuts the shell, the base flange 23 of the spacing plate being continued to a point where it abuts against the front flange. As also illustrated in Fig. 6, the blade 14^a may be so formed as to fit the forward side of the back plate, the plate being in such case preferably offset as shown so as to present a smooth forward surface.

In Figs. 4 and 5 I have illustrated a form of cutter in which the back plates 19 and blades 20 are relatively short, and several series of such plates are arranged in bands along the shell of the plow, the members of one series alternating with those of the others in staggered relation.

In Fig. 7 I have illustrated a modified form of my invention in which back plates 21 equipped with blades 14 extend the full length of the plow, but in which the spacing plates 15 are arranged in offset or stepped relation, instead of in alinement to make up rings of plates. The spacing plates may also be arranged in spiral form, if desired, and it is obvious that still other modifications and variations in the arrangement of parts may be made without departing from the spirit of my invention.

While in the drawings and foregoing specification I have illustrated and described my novel form of plow as arranged to rotate in such direction that the cutters will move forwardly in entering the earth, and the soil will be carried upwardly around the plow, it will be understood that it is also well adapted for use in a plowing machine in which the cutter is arranged to rotate in the opposite direction and throw the earth directly to the rear.

I claim:

1. A rotary cutter comprising a rotatable cylindrical shell, a series of back plates carrying forwardly curved blades, and spacing plates each interposed between and secured to two adjacent back plates.

2. A rotary cutter comprising a rotatable cylindrical shell, a series of back plates carrying forwardly curved blades, and spacing plates each interposed between and arranged to brace said back plates and secured to said shell.

3. A rotary cutter comprising a rotatable cylindrical shell, a series of back plates carrying forwardly curved blades, and spacing plates each interposed between and secured to two adjacent back plates and also secured to said shell.

4. A rotary cutter comprising a rotatable cylindrical shell, a series of back plates having forwardly directed outer portions, cutter blades secured to such outer portions of the back plates, and spacing plates each interposed between and secured to two adjacent back plates and also secured to said shell.

5. A rotary cutter comprising a rotatable cylindrical shell, a series of back plates carrying forwardly curved blades, and flanged spacing plates, each plate being interposed between and secured by opposite side flanges to two adjacent back plates and also secured by a base flange to said shell.

6. A rotary cutter comprising a rotatable cylindrical shell, a series of back plates carrying forwardly directed blades, and spacing plates formed with a curved base flange and having a long flanged front wall and a short flanged rear wall, each plate being interposed between and secured by its flanges to two adjacent back plates and also secured by its base flange to said shell.

7. A rotary cutter comprising a rotatable cylindrical shell, a series of back plates having forwardly directed outer portions, cutter blades secured to such outer portions of the back plates, each blade being formed with a rearwardly facing shoulder near its front arranged to abut against the front edge of said back plate, and spacing plates each interposed between and secured to two adjacent back plates and also secured to said shell.

8. A rotary cutter comprising a rotatable cylindrical shell, a series of back plates having forwardly curved outer portions, cutter blades secured to the outer faces of such outer portions of the back plates and each presenting at its rear edge a rearwardly facing shoulder, and spacing plates secured to said shell and each having a forward side flange secured to the adjacent back plate and arranged to abut against the shoulder formed by the rear edge of the cutter blade secured to such back plate.

9. A rotary cutter comprising a rotatable cylindrical shell, a series of back plates have ign forwardly curved outer portions, cutter blades secured to the outer faces of such outer portions of the back plates and each curved inwardly to embrace a part of the inner portion of the back plate to which it is secured and presenting a shoulder at its rear edge, and spacing plates secured to said shell and each having a forward side flange secured to the adjacent back plate and arranged to abut against the shoulder formed

by the rear edge of the cutter blade secured to such back plate, the front outer edge of each spacing plate being arranged to overlie the rear portion of the cutter blade in front of it.

10. A rotary cutter comprising a rotatable cylindrical shell, a series of back plates extending the length of the shell and presenting forwardly directed cutting blades, and spacing plates arranged in a series of rings, the spacing plates of each series being in alinement and being each interposed between and secured to the two back plates adjacent it and also secured to said shell.

11. A rotary cutter comprising a rotatable cylindrical shell, a series of back plates extending the length of the shell and presenting forwardly directed cutting blades, and spacing plates arranged in a series of rings, each plate being formed with a curved base flange secured to the shell and opposite side flanges, the spacing plates of each series being arranged in alinement and being each interposed between and secured to the two back plates adjacent it by its side flanges.

12. A rotary cutter comprising a rotatable cylindrical shell, a series of back plates carrying forwardly curved blades, said plates being formed with base flanges and said flanges being secured to the shell, and spacing plates arranged to brace said back plates.

13. A rotary cutter comprising a rotatable cylindrical shell, a series of back plates carrying forwardly curved blades, spacing plates each interposed between two back plates and arranged to brace a back plate, and means for securing said shell and back plates and spacing plates together.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."