

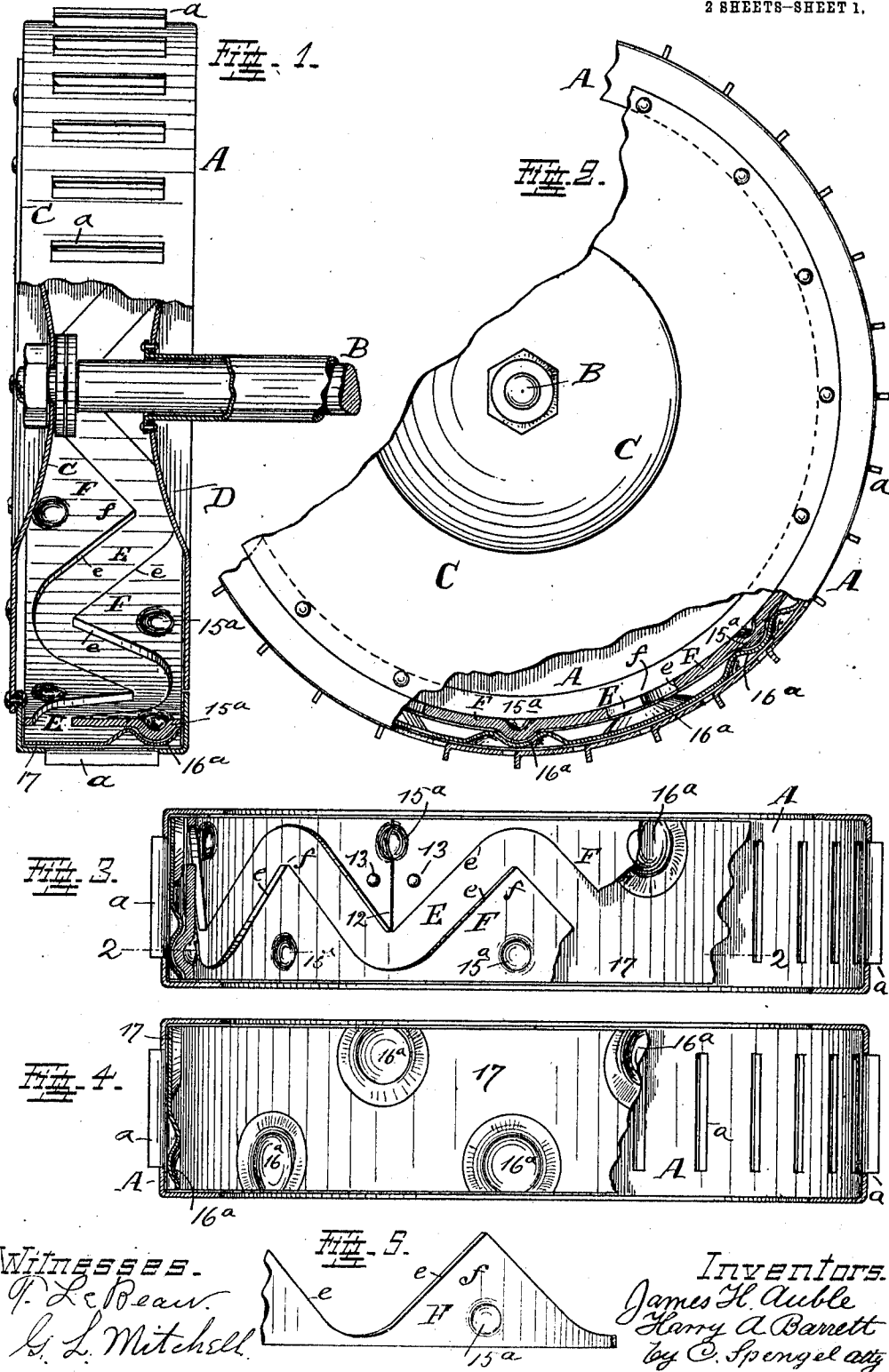
J. H. AUBLE & H. A. BARRETT.
MOWER WHEEL.

APPLICATION FILED AUG. 13, 1909.

970,455.

Patented Sept. 20, 1910.

2 SHEETS-SHEET 1.



Witnesses.

G. L. Beau.

G. L. Mitchell.

Inventors.
James H. Auble
Harry A. Barrett
by C. Spengel atty

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2 SHEETS—SHEET 2.

Fig. 6.

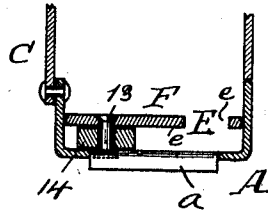


Fig. 7.

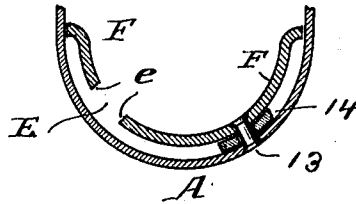


Fig. 8.

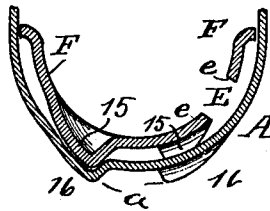
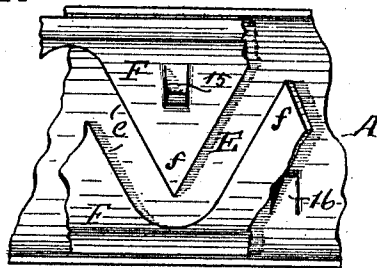


Fig. 9.



Witnesses.

J. L. Beau.
A. S. Archibald.

Inventors.

James H. Auble
Harry A. Barrett
by C. Spengel atty.

UNITED STATES PATENT OFFICE.

JAMES H. AUBLE AND HARRY A. BARRETT, OF CINCINNATI, OHIO.

MOWER-WHEEL.

970,455.

Specification of Letters Patent. Patented Sept. 20, 1910.

Application filed August 13, 1909. Serial No. 512,637.

To all whom it may concern:

Be it known that we, JAMES H. AUBLE and HARRY A. BARRETT, citizens of the United States, and residents of Cincinnati, Hamilton county, State of Ohio, have invented certain new and useful Improvements in Mower-Wheels; and we do declare the following to be a clear, full, and exact description thereof, attention being called to the accompanying two sheets of drawings, with the reference characters marked thereon, which form also a part of this specification.

In halm cutting-devices like lawn and field-mowers, there are certain types in which the cutting means are actuated by reciprocatory elements, moved by annular cam-grooves of zig-zag shape formed or contained within the driving-wheels. To produce these annular grooves in a metallic surface and of proper and accurate shape is not so readily accomplished and the object of our invention is to provide means and a construction whereby wheels so grooved may be manufactured in proper manner and furnished as an article of manufacture within reasonable expense-limits.

In the following specification and particularly pointed out in the claims at the end thereof, will be found a full description of our invention, together with its manner of use, parts and construction, which latter is also illustrated in the accompanying two sheets of drawings, in which.

Figure 1, shows the wheel edgewise with parts broken away. Fig. 2, is a fragmentary side-elevation with parts broken out and shown in a section as indicated by line 2—2 in Fig. 3. Fig. 3, is an internal view of the wheel-rim and of adjacent parts some of which are partly broken away. Fig. 4, is a similar view with some of these adjacent parts removed. Fig. 5, shows a portion of one of the parts used to form the cam-groove. Figs. 6, 7 and 8, are sectional profile views of modified construction of the grooved wheel-rim. Fig. 9, is a top-view of part of the wheel-rim shown in Fig. 8.

The construction of this wheel is so devised as to make the use of sheet-metal possible and we prefer to use this material accordingly, although metal in other forms is not excluded. The outer face or tread of the shell is formed by an annular rim A, which is provided with outwardly extending, short

teeth, or climbers *a* which serve to promote the traction and prevent slipping. They are produced by forming angular cuts in the metal of the rim between its edges and by turning part of the separated metal outwardly as shown. Means upon which the rim is mounted are provided which might be an axle in which case spokes are used between the two. In lawn-mowers a closed disk as shown at C usually takes the place of spokes, it being connected to the rim and preferably to the outer edge thereof. The inside of the wheel, especially in lawn-mowers, is usually closed likewise by another disk D, which however has no connection with any parts of the wheel and is stationary with reference to it. It also serves as a frame and supports the cutting means and the mechanism for operating them and which mechanism in turn is operated by the cam-grooved wheel. The details concerning the construction and manner of support of this disk as well as of disk C, and the formation of the axle-bearing in this latter and the manner of supporting the wheel-rim, form no essential features of this invention.

The annular cam-groove E, of zig-zag shape is provided inside of the wheel, its function being to actuate the mechanism whereby the cutting devices of the implement are operated and which mechanism (not shown), is usually supported on the stationary disk D. The immediate engagement of this mechanism with the groove is usually by means of a roller carried by the former and which, while prevented from moving around with the wheel-rim, is so supported as to be free to move transversely with reference to this latter. The reciprocating motion necessary for the operation of the implement is thus imparted to the roller and by it to the cutting mechanism.

The particular shape of the cam-groove, its pitch, that is the number of its alternate turns with reference to the circumference of the wheel, are matters which are governed by the nature of the particular operating mechanism used in connection therewith and have no bearing on the particular construction of the groove to be now described.

The opposite sides *cc* of the groove are each formed by one edge of strips F, which strips are each bent to the form of a circle of a size

permitting them to be placed inside of the wheel-rim. These edges are shaped as shown in Fig. 5, which might be described as serrated or toothed. To form the groove, two of these strips are placed edgewise opposite each other inside of the wheel in this manner that a tooth *f* of one strip extends into the space between two teeth of the opposite strip as best shown in Fig. 3, and with a space between them, which space constitutes cam-groove E. The width of these strips, together with the groove-forming space between them is such that they may be readily received between the edges of the rim. Circumferentially considered, we prefer to make each strip of one piece, although they may also be made up in sections. We prefer to join the ends of these strips where they are widest and as shown at 12 in Fig. 3. The strips so placed must be secured to maintain their position with reference to each other, that is properly spaced to maintain the width of the cam-groove, and they must also be held against slipping circumferentially within the wheel. Rivets 13 passing through these strips and through the wheel-rim as shown in Figs. 3 and 6, form an efficient medium for this purpose. Increased depth may be obtained for the groove by placing spacing means in shape of washers 14 between rim and strips, the rivets serving also to hold them in place as shown in Fig. 6.

In Figs. 7, 8 and 9, possibility of the application of this construction to wheels having a rounded edge or face is illustrated. Increased depth of the groove may be obtained by the use of spacing means as before described and shown in Figs. 6 and 7.

In Fig. 8, another manner of holding strips F in position is shown which consists of producing a projection 15 on the outer side of strips F, which form the groove and which projections are fitted to be received by sockets 16, formed in the wheel-rim. Both these formations are produced by depressing the metal accordingly. The particular shape considered in the circumferential plane of the rim is shown in Fig. 9 and is such as to fix the position of strips F circumferentially as well as transversely so that they are held immovable in both directions. The outer side of these sockets serves to form the teeth or climbers *a* described before. By making the extent of the projections such as to be higher than the depth of the sockets, strips F will be spaced from the inner side of the wheel-rim to increase the depth of groove E the same as is done by washers 14.

In Figs. 1 to 5, similar projections are shown but of different shape and as indicated at 15^a. Complementary sockets 16^a for them are formed in a similar manner, but in an independent member instead of in

the wheel-rim. This member consists of a ring 17 of such size as to fit readily and snugly into the wheel and contains all the sockets required.

The arrangement of the projections and of their complementary sockets might be reversed, that is the sockets might be in strips F and the projections in the member upon which these strips are seated.

While, as before stated, the shape of the cam-groove is governed by the character of the mechanism which is actuated thereby, we prefer to form the groove so that the particular member actuated thereby moves as near as possible with a constant speed at all times and without a drag particularly in those parts of the groove laterally farthest apart and where the motion changes from one in one direction, to one in opposite direction. For such purpose that part of the side which is inner-most at the turns of the groove and formed by the toothed portions *f* of the strips is formed with an acute angle. The result is that the roller or the particular element fitted to the groove, moves from one part thereof quickly into the other part and is reversed in motion without drag. Otherwise the edges of strips F, forming the sides of the groove, particularly in the form shown in Figs. 7 and 8, should be so shaped that they fit snugly against the member moved by them, to prevent binding or lost motion between the engaged parts. A cam-groove so constructed is not necessarily limited to use in connection with mower-wheels as suggested, but may be used in any connection where rotary motion is to be converted into reciprocatory motion.

Having described our invention, we claim as new:

1. As an article of manufacture, a hollow wheel-body for a wheel to actuate the cutting mechanism of a mower and which is provided with a zig-zag shaped cam-groove, the sides of which are formed by the complementarily shaped, opposite longitudinal edges of two spaced strips, projections formed on these strips and complementary sockets provided inside of the wheel to which these projections are fitted and whereby these strips are held in position.

2. In an article of manufacture, the combination with the rim of a wheel to actuate the cutting mechanism of a mower, of two strips placed inside of this rim with a space between their opposite longitudinal edges, which edges are shaped to form the opposite sides of a zig-zag shaped cam-groove, complementary projections and sockets for them being provided on these strips and on the rim, whereby the strips are held in position.

3. In an article of manufacture, the combination with the rim of a wheel to actuate the cutting mechanism of a mower, of two strips

placed with a space between their opposite longitudinal edges, which edges are shaped to form the opposite sides of a zig-zag shaped cam-groove, and an intermediate annular member held between these strips and the wheel-rim, there being complementary projections and sockets to receive them, on these strips and on the intermediate member, whereby the strips are held in position within the wheel.

4. As an article of manufacture, a hollow wheel-body for a wheel to actuate the cutting mechanism of a mower and which is provided with a zig-zag shaped cam-groove, the sides of which are formed by the complementary shaped, opposite longitudinal edges of two spaced strips, projections formed on these strips and complementary sockets provided inside of the wheel to which these projections are fitted and whereby these strips are held in position, the height of the projections being in excess of the depth of

the sockets so as to space the strips from the wheel.

5. In an article of manufacture, the combination with the sheet-metal rim of a wheel to actuate the cutting mechanism of a mower which is provided with spaced depressions on its inside which form projections on its outside constituting climbers, of two annular strips which have projections fitted to these depressions and whereby these strips are held in position with a space between their opposite longitudinal edges which latter are shaped to form the opposite sides of a zig-zag shaped cam-groove.

In testimony whereof, we hereunto affix our signatures in presence of two witnesses.

JAMES H. AUBLE.

HARRY A. BARRETT.

Witnesses:

C. SPENGEL,

T. LE BEAU.