(No Model.)

S. P. KIMBALL.

COMBINED ROLLER AND HARROW.

No. 287,836. Patented Nov. 6, 1883.

Fig 1.

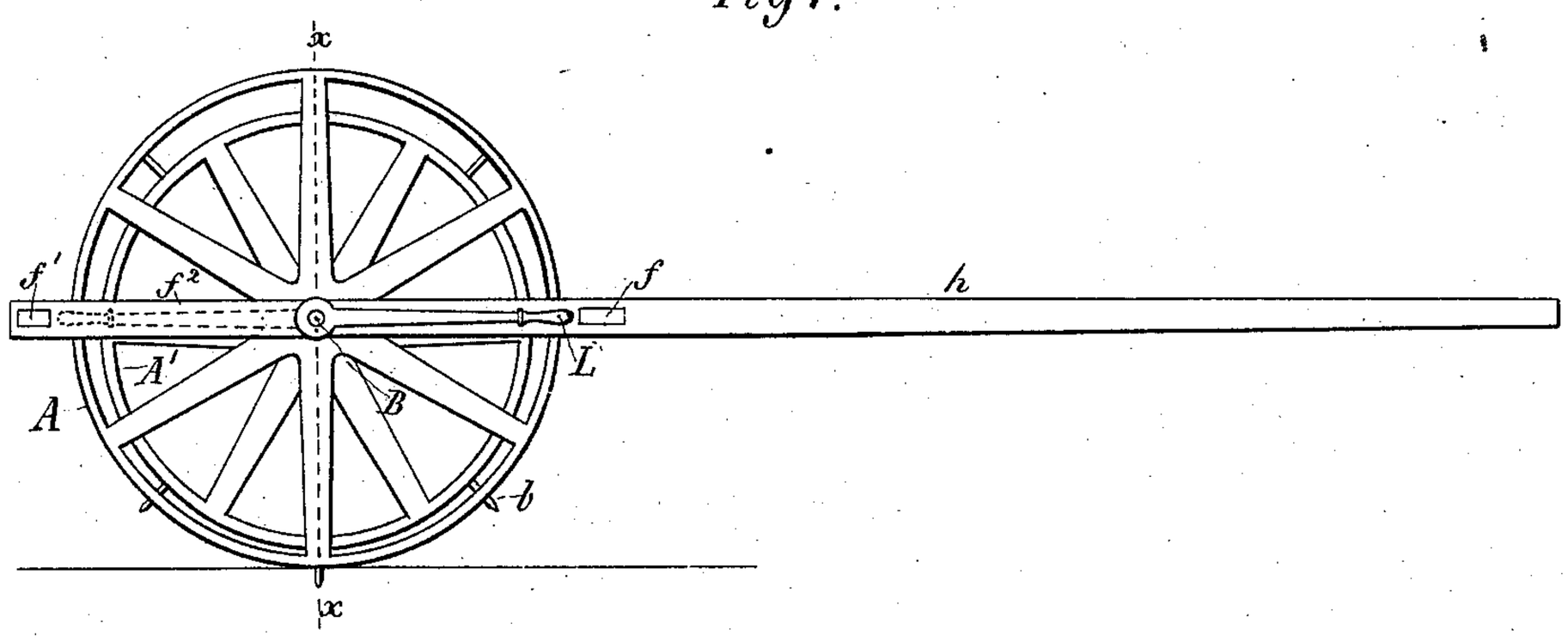


Fig 2.

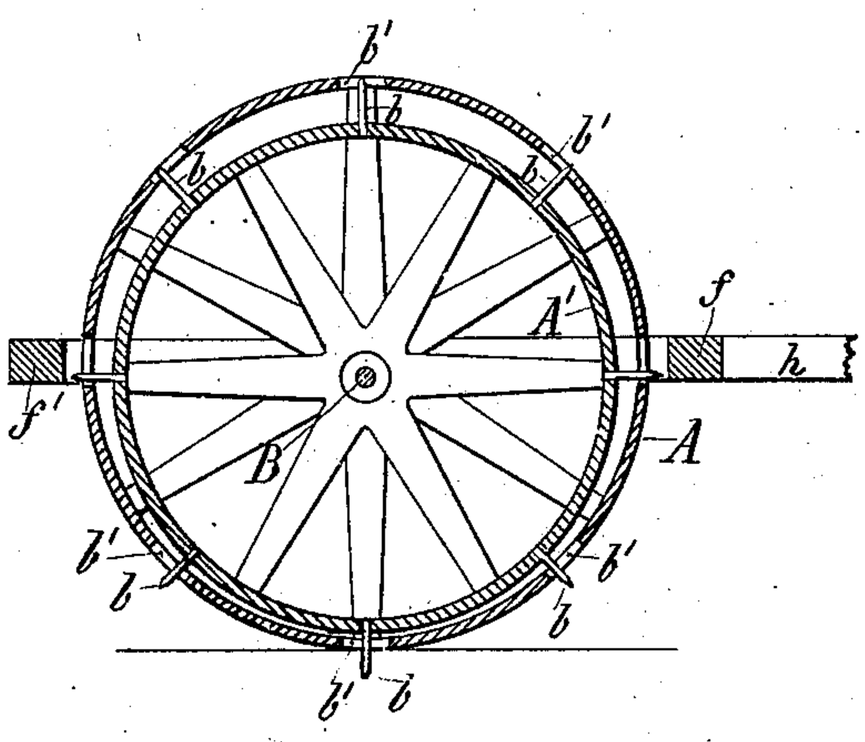


Fig 3.

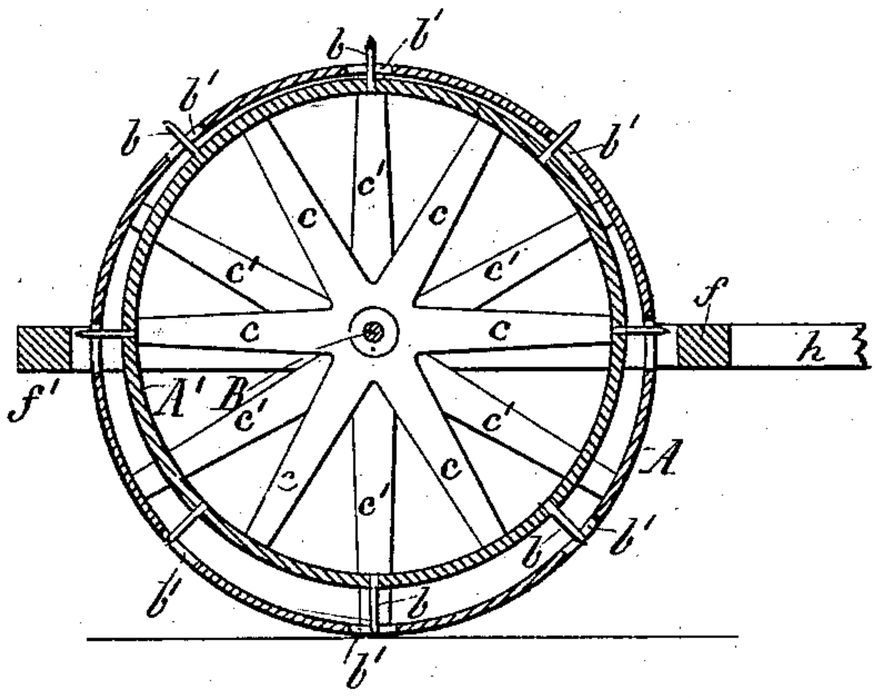
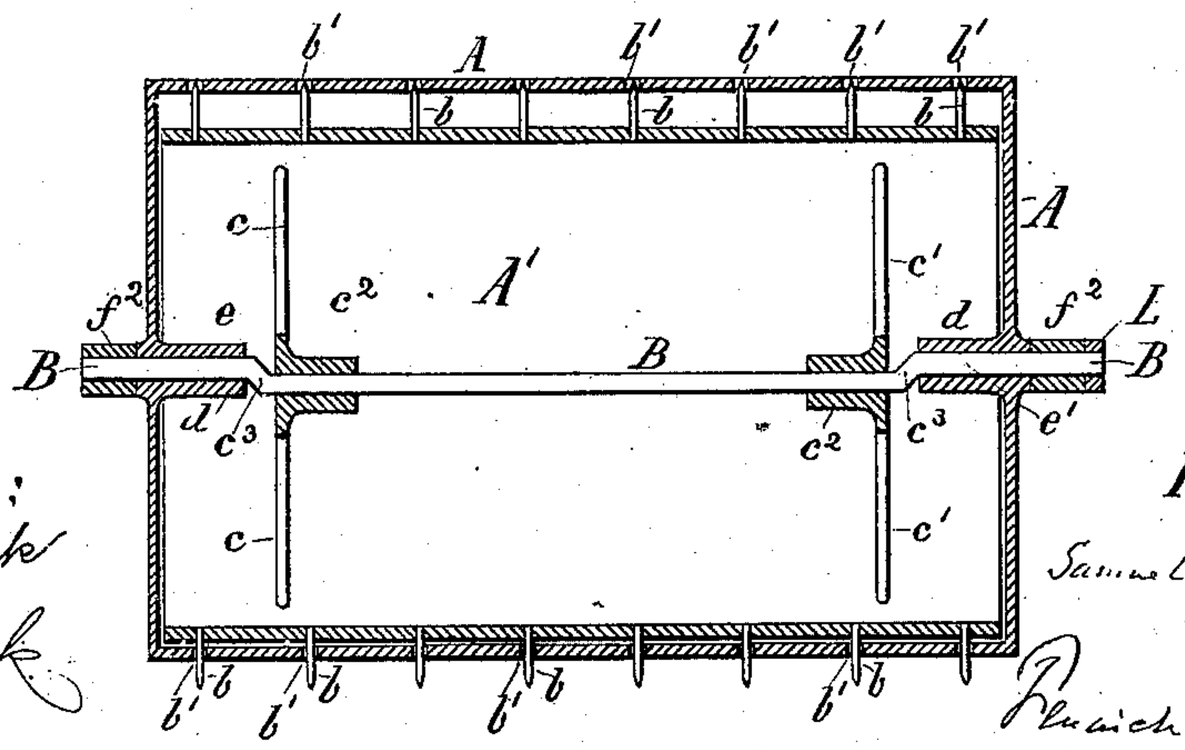


Fig 4.



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UNITED STATES PATENT OFFICE.

SAMUEL P. KIMBALL, OF WOODSTOCK, OHIO.

COMBINED ROLLER AND HARROW.

SPECIFICATION forming part of Letters Patent No. 287,836, dated November 6, 1883.

Application filed July 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL P. KIMBALL, a citizen of the United States, residing at Woodstock, in the county of Champaign and State of Ohio, have invented a new and Improved Combined Roller and Harrow, of which the following is a specification.

My invention relates to a field-roller which, at the will of the operator, can conveniently be made to present for contact with plowed soil either a toothed or plain operating-surface, whereby the earth can first be broken by the teeth of the roller and then mashed or pulverized by the smooth cylindrical surface thereof, and thus the functions commonly performed by two separate field implements are secured in a single one, effecting thereby a great saving in first cost, and greatly facilitating the operation of breaking and pulverizing the soil.

In the accompanying drawings, Figure 1 is a side elevation of my improved field-roller and harrow, the lever which adjusts the shaft of one cylinder armed with harrow-teeth being shown by full lines for one position of the teeth, and by dotted lines for the other position of the same. The teeth in this view, as well as in Fig. 2, are adjusted for protruding through the roller at points where it touches the soil. Fig. 2 is a vertical longitudinal section of the combined rolling and harrowing machine, the parts being in the position shown by full lines in Fig. 1. Fig. 3 is a similar section to Fig. 2, with the lever reversed in position and the harrow-teeth set so as not to protrude through the roller at the points where the roller touches the soil; and Fig. 4 is a vertical section in the line *x x* of Fig. 1, showing the field-roller and harrow in longitudinal section, and illustrating the crank or eccentric mechanism by which the teeth of the harrow are adjusted so as to protrude through the roller at points below the axis of roller when it is desired to perform the operation of harrowing, and to protrude through the roller at points above the axis of the roller when a crushing or land-rolling operation is to be performed by the machine.

In the figures, A indicates an outer cylinder of metal, inclosing an inner cylinder, A′, having open ends, and armed over its surface with harrow-teeth *b*, both of said cylinders being applied to a crank-axle, B, so as to loosely revolve thereon when the machine is in the act of use. The inner cylinder, A′, is provided with radial arms, as *c c′*, extending from hubs c^2 to the inner periphery of the cylinder, and thereto attached in any suitable manner. The cylinder A′ is thus properly supported upon the crank-axle B, between the crank-arms c^3 c^3 of said crank-axle, as shown, and may revolve around and upon the same when the machine is in use. The outer cylinder, A, is provided with hubs or bearings *d d*, through which the outer end portions, *e e′*, of the crank-axle B pass. The two cylinders are applied within a transporting-frame composed of a front bar, *f*, a rear bar, *f′*, and side bars, f^2, the axle B being made to pass through the side bars, f^2, as indicated in Fig. 4, and thus when a team is harnessed to the draft-pole *h* of said frame the cylinder A will be rotated by traction contact with the ground. This cylinder, as shown in the figures, is provided with oblong slots *b′*, through a series of which a series of the harrow-teeth *b* are made to project at points either above the longitudinal axis of the roller A or at points below said axis, according as the crank-axle B is turned by its lever L. This lever L is so applied rigidly to the crank-axle B that when it is made to assume the position shown in solid lines in Fig. 1 the harrow-teeth *b* of the inner cylinder, A′, will be projected through the slots *b′* of the outer cylinder, A, as shown in Figs. 1, 2, and 4, and thus perform the work of a harrow in the ground over which the machine is drawn; and when said lever is reversed into the position indicated in dotted lines in Fig. 1 the teeth *b* will project through the slots *b′* of the cylinder only at points above the longitudinal axis of the cylinder A, as indicated in Fig. 3, thus leaving the cylinder A at its point of contact with the ground to perform the work of a land-roller; and in either case the cylinder A′ will be made to rotate simultaneously with the rotation of the cylinder A by reason of the projection of the harrow-teeth through the slots *b′* of the cylinder A. In this manner the machine may, at the will of the operator, be converted from a land-roller into a harrow, or from a harrow into a land-roller.

Any convenient device which will admit of a reversal of the position of the lever L may be adopted for holding the lever temporarily in place, as desired.

I am aware that in Letters Patent No. 181,976 spades have been applied to a roller and forced out beyond the periphery of said roller by eccentric slots or guideways, and also drawn into the roller by said ways; further, that in said patent certain means are shown for adapting the spading-machine for rolling land; but this patent does not show a combined harrow and field-roller; nor does it show a combination of simple devices, such as I have shown and described.

I also am aware that in Letters Patent No. 229,106 a cornstalk-cutter is shown and described. This stalk-cutter was never designed as a harrow; nor is there any suggestion that it might be used as a combined harrow and field-roller.

I do not claim constructions and combinations shown in either of the above-mentioned patents; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

The combination of harrow-teeth applied to a cylinder, A′, fastened to a crank-axle, B, which is provided with a reversing-lever, L, and a field-roller, A, having holes in its periphery for the harrow-teeth to work in back and forth while they are being reversed by the lever, said roller being hung loosely on the axle B, and surrounding the cylinder A′, substantially as and for the purpose described.

SAMUEL P. KIMBALL.

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