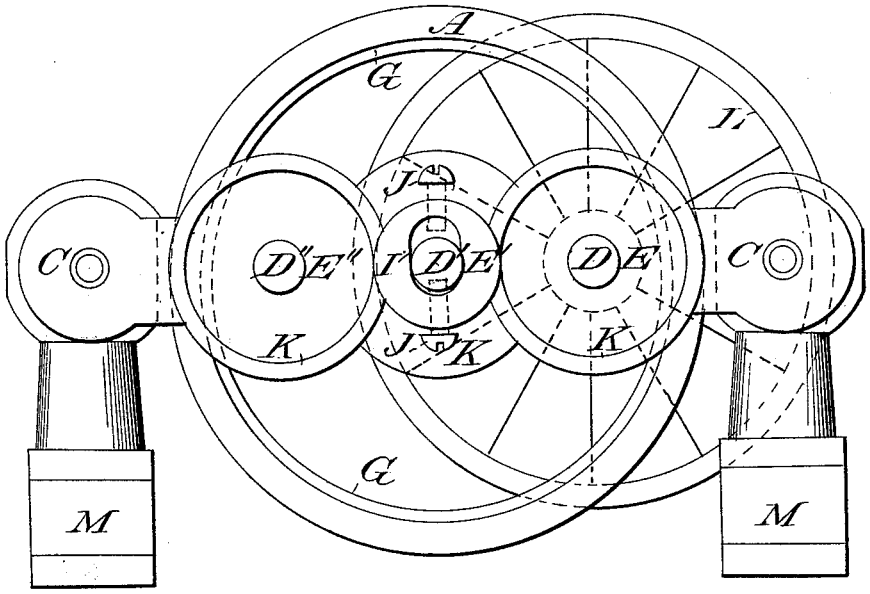
2 Sheets—Sheet 1.

G. E. BURT.

Traction Mechanism for Propelling Machinery.

No. 218,111. **Patented Aug. 5, 1879.**

Fig. 1.



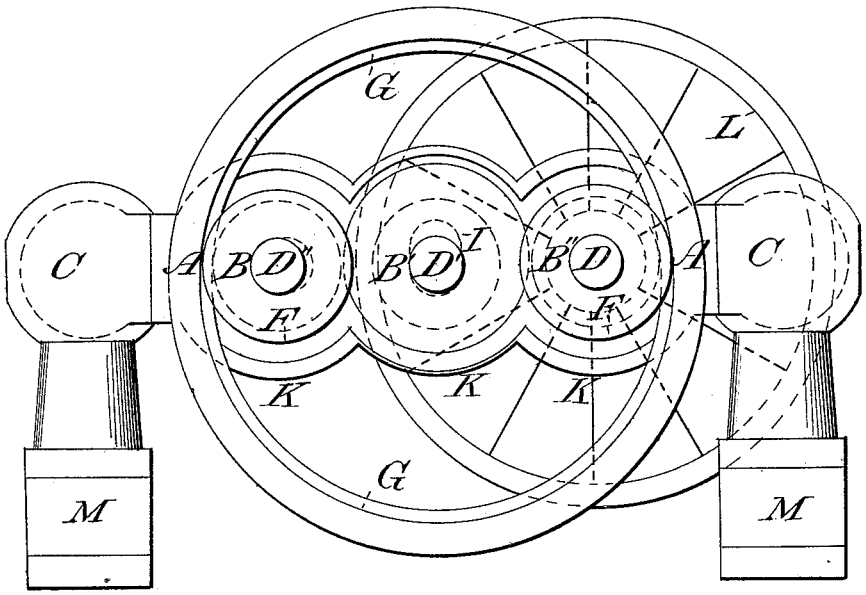


Fig. 2.

Attest;

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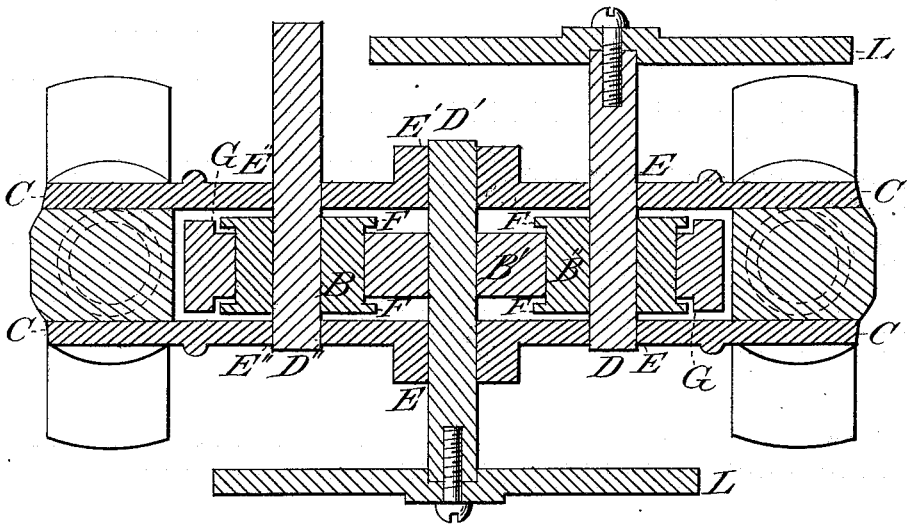
Fig. 3.



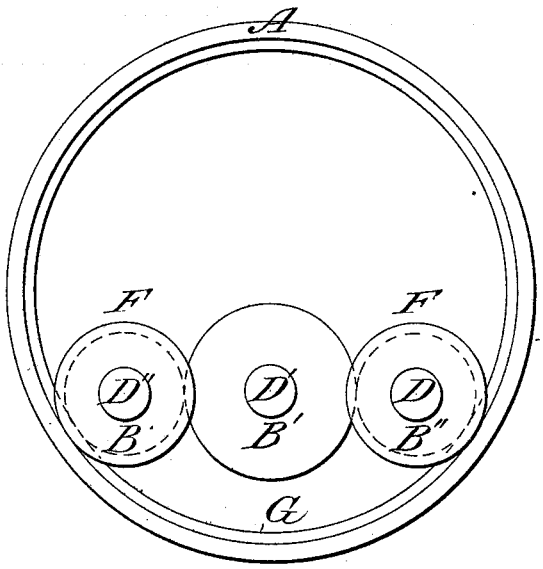


Fig. 4.

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James Monroe Barry

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Inventor:

George Edward Burt.

UNITED STATES PATENT OFFICE.

GEORGE E. BURT, OF HARVARD, MASSACHUSETTS.

IMPROVEMENT IN TRACTION MECHANISMS FOR PROPELLING MACHINERY.

Specification forming part of Letters Patent No. **218,111**, dated August 5, 1879; application filed February 20, 1879.

To all whom it may concern:

Be it known that I, GEORGE EDWARD BURT, of Harvard, in the county of Worcester and State of Massachusetts, have invented a new and useful method and mechanism for transmitting power and increasing speed in a very small compass to propel machines—to wit, horse-powers, lawn-mowers, tedders, reapers, &c.—of which the following is a specification.

The nature of this invention consists in employing the contracting force of the internal arc of a circle to act on a train of traction-rolls, and thus holding them in contact with the surfaces of each other and the internal surface of the ring or circle, thus creating traction or propelling power sufficient to drive or propel various machines without the employment of cogs, as are now used in such machines.

I am aware that friction rolls or pulleys have been employed for transmitting motion for some purposes; but the devices heretofore used to force the friction-rolls together caused a large amount of friction on the journals or bearings on which the friction-wheels turn; but by my method of employing the contracting arc of a circle and a series of traction-rolls, the force thus applied acts directly on the periphery of the traction-rolls and the internal surface of the arc, and relieves the journals or bearings of all the strain of the traction-force, and the power is doubled, as it acts upon two points of the opposite side of the traction-rolls and arc. The traction of the rolls may be diminished or increased by placing them so that their bearing on the arc shall be on the center of the extreme diameter of the ring, above or below it. As the traction-rolls recede from the center of the ring the traction-force of the arc is diminished. This force may be graduated to be more or less, as is desirable.

In the accompanying drawings, Figure 1 is a side view, showing the position of the propelling-ring, the incased traction-rolls, and the pulley or wheels to be propelled. Fig. 2 is a side view with the boxes and one-half of the frame and the casing of the traction-rolls removed, showing the position of the traction-rolls with each other and the propelling-ring and contracting arc. Fig. 3 is a transverse longitudinal-sectional view through the traction-rolls, showing the arrangement and construction of the various parts and their relation to each other. Fig. 4 is a side view of the ring, showing the traction-rolls placed on the arc a considerable distance below the center of the diameter of the ring. F F are flanges. G is the groove.

These machines may be constructed of wrought or cast iron, steel, or hard gun-metal; for cheapness I use cast-iron. The ring and traction-rolls may be cast in chills, leaving their rolling-surfaces very hard, requiring but little finish, and being very durable. I make the ring A of the size, weight, and strength necessary for the work for which it is to be used. If I want a large amount of propelling-force, I make the traction-rolls B B′ B″ of such diameter that the united diameters of the three shall be equal to the internal diameter of the ring or arc. This brings their surface-bearing on the center, or very nearly; if exactly on the center, the inward contracting force of the arc would be very great; but for practical use I make the traction-rolls to rest a little below the extreme diameter of the ring or arc.

In order to regulate the contracting force of the ring or arc, I make perpendicular slots I and sliding boxes E′ in the case or frame C, for the journals or pivots, and regulate the position of the roll B′ by means of screws J J. (Shown in Fig. 1.) By placing the traction-roll B′ out of the line of the centers of the traction-rolls B B″ the space occupied by the three rolls is less than the diameter of the ring shown in Fig. 2, and by altering the position of the roll B′ the traction may be regulated. Thus the wear of the rolls and ring can be compensated for.

I construct the box E for the shaft D to hold the shaft in positive position; but the box E″ for the shaft D″ in the frame C permits the shaft to slide laterally. By this device the rolls come in contact, and rest against each other. (Shown in Fig. 2.) I attach wheels L to either of the shafts D of the rolls. If I wish to run a light machine, like a lawn-mower, I construct the traction-rolls of such a diameter in relation to the ring or arc that the rolls will rest on a point considerably below the line of the center of the ring, substantially as shown in Fig. 4.

I construct the main frame C with project-

ing flanges K, curved to cover the traction-rolls and exclude dirt or any substance that might wear or otherwise injure the rolls or propelling-ring. It also prevents all liability to accident, which often occurs in the use of open cog-wheels; and, when desirable, this boxing may be extended around the internal arc, making a very strong frame for the propelling-ring and rolls to be operated in. I construct the ring A with a groove, G, and rolls B B′ with flanges F F and grooves for the flanges to run in. The flanges and grooves hold the ring and rolls in line and in proper position when in operation. (Shown in Fig. 3.)

The rolls B B″ being of different diameter gives more or less speed to the center-shaft wheel D′, which revolves two and a half times to the end shaft D″ three times, and the wheels turn in opposite directions. This method of transmitting motive power operates with less noise than the best cut cogs, and is cheaper, and is very desirable for some purposes.

In applying this invention to horse-powers, the ring may be used for the end spider or drums; or the ring may be constructed with cogs to cog into the platform-chain. The necessary amount of traction on the rolls may be regulated according to the amount of weight resting on the ring. The wheels L L may be changed from shaft to shaft, and the rolls may be varied in their diameter, giving more or less speed to the different shafts.

Operation: When the propelling-ring A and traction-rolls B B′ B″ are arranged substantially as described, and motive power is applied to the ring A, and power or motion is to be taken from the shaft D, the ring A should be made to revolve toward the shaft from which the power is taken, as the traction-force is greater when applied in the direction the shaft and wheels revolve.

Having thus described the nature, construction, and operation of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The method of transmitting motive power by a ring and its contracting arcs, and a series of traction-rolls resting in contact with each other and the arcs of the ring below the center, provided with recesses and flanges, arranged and covered within the periphery of the ring, for the purpose set forth.

2. The regulating-screws J J and the oblong box-seats E′, in combination with traction-rolls B B′ B″ and the ring A, operating substantially for the purposes set forth.

3. The protecting-casing K K′ K″, in combination with the traction-rolls B B′ B″, the ring A, and frame C, substantially as described.

GEORGE EDWARD BURT.

Witnesses:

JAMES MONROE BARRY,

EDWARD JAMES MCLAUGHLIN.