W. Beach.

Road Rammer.

No. 30,042. Patented Sept. 18, 1860.

Fig. 1.

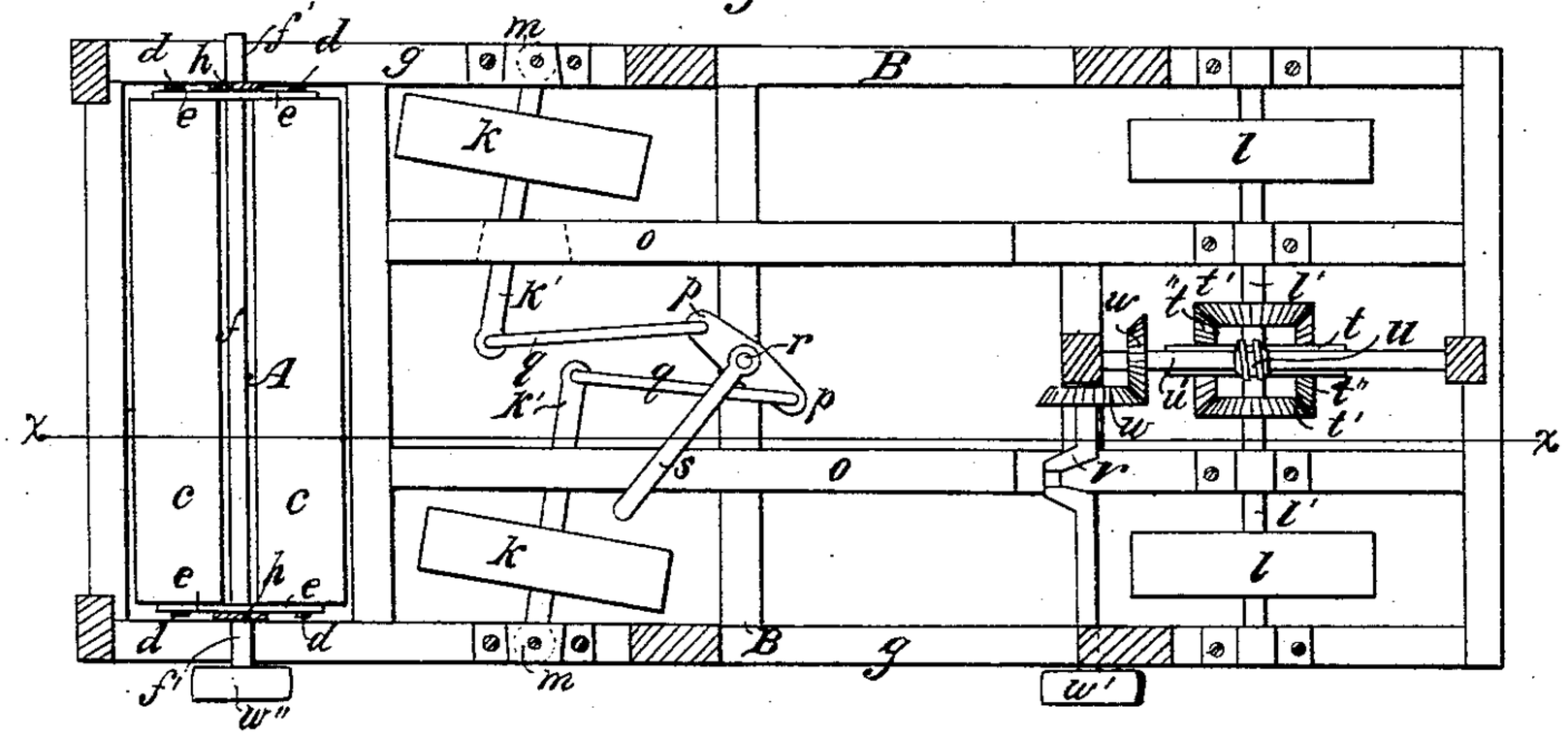
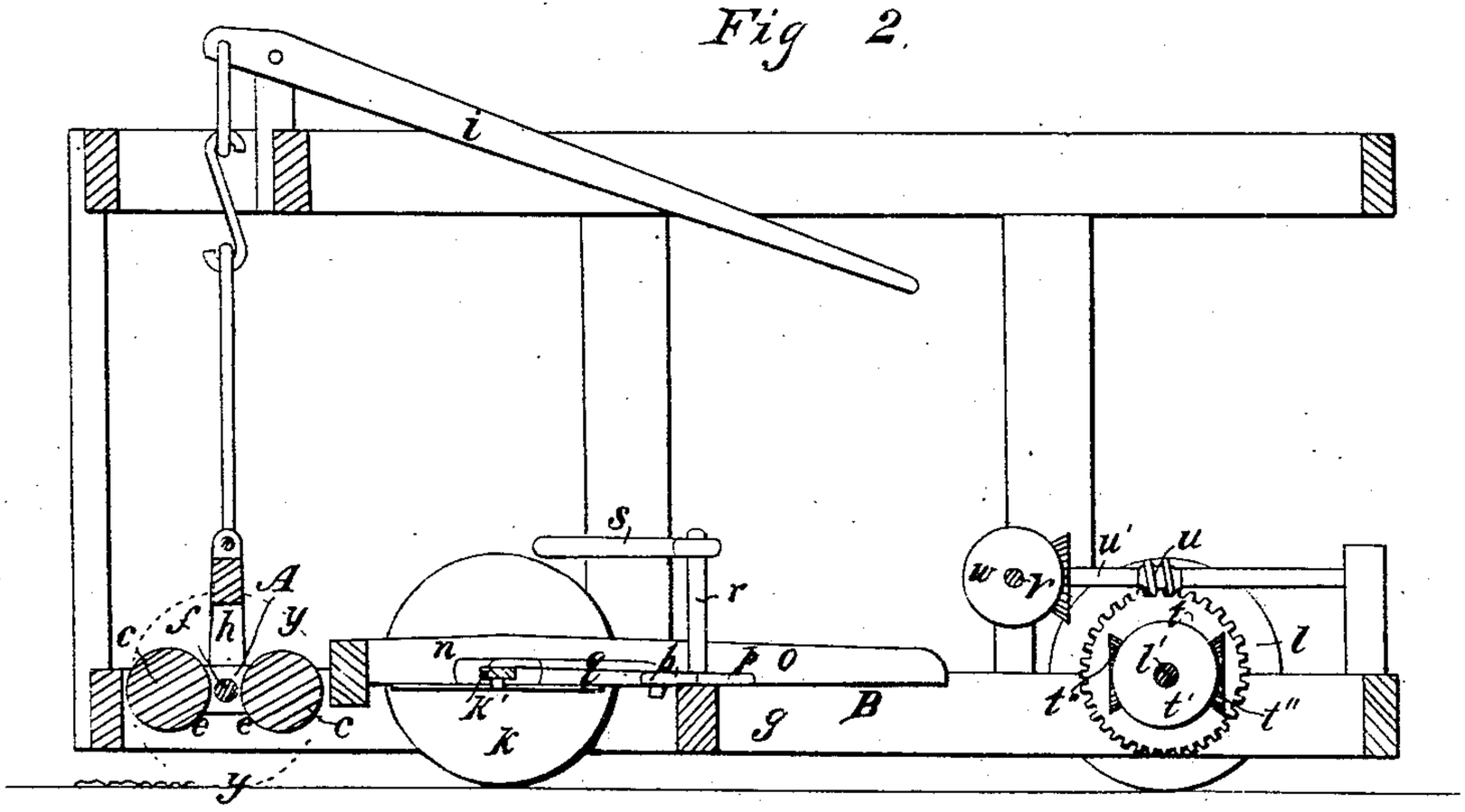


Fig 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM BEACH, OF PHILADELPHIA, PENNSYLVANIA.

RAMMER FOR STREET-PAVING.

Specification of Letters Patent No. 30,042, dated September 18, 1860.

To all whom it may concern:

Be it known that I, WILLIAM BEACH, of the city of Philadelphia and State of Pennsylvania, have invented a new and Improved Rammer for Street-Paving; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a plan view, and Fig. 2, a longitudinal vertical section, through the line *x* of Fig. 1.

Like letters, when on both figures, indicate the same objects.

The nature of my invention consists in the construction and application of a balanced revolving beater, to a locomotive-truck arranged to operate substantially as hereinafter described; whereby, cobble, or other stones, after being set in the usual manner for paving streets, can be rammed down into that state of compactness, solidity, and evenness which is required to produce a well paved roadway, in a much more perfect and expeditious manner than heretofore.

In the drawings, A, represents the revolving beater, and B, the locomotive truck, the steam-engine, or other motive power which may be applied for operating the machine, not being shown in the drawings.

The beater (A) consists of two cylinders *c*, *c*, of cast iron, supported, near the forward end of the truck (B), by journals *d*, *d*, between the arms *e*, *e*, which are rigidly fixed upon the shaft *f*. The ends of the shaft (*f*) rest in slotted bearings or guides *f'*, made in the two sill-pieces *g*, *g*, of the frame of the truck (B), so that the said cylinders (*c*, *c*) will be carried around during the rotary motion of the shaft (*f*), substantially in the manner hereinafter described. Attached to the shaft (*f*), is a bridle *h*, which is suspended from a hand lever *i*, so that the whole revolving beater (A) can be readily raised or lowered in its bearing guides, by the operator, as occasion may, from time to time, require.

The frame of the truck (B) is supported, at a few inches from the paved surface of the street, upon the four wheels *k*, *k*, and *l*, *l*. The axles *k'*, *k'*, of the forward wheels (*k*, *k*,) are distinct, and their respective wheels free to rotate thereon. The outer end of each of the said axles (*k' k'*) is secured, respectively, to the sills (*g*, *g*,) of the frame, by means of a pivot or bolt, *m*, which passes vertically through them; while part of the axle on the opposite side of each wheel (*k*, *k*,) passes through a horizontal slot, *n*, in its respective inner sill *o*, or *o*, and the inner ends of the said axles are respectively connected to the arms *p*, *p*, by means of the rods or bars *q*, *q*, which are jointed thereto, respectively, so that, when the arms (*p*, *p*,) are vibrated horizontally, by means of the turn post (*r*) and hand lever (*s*), the axles *k'*, *k'*, will also be caused to vibrate on their respective pivots (*m*) and thereby the wheels (*k*, *k*) will be varied in the direction of their motion so as to enable the operator thereby to guide the machine as occasion may require.

The rear or driving wheels (*l*, *l*) are fixed rigidly upon distinct axles *l' l'* which rotate in bearings ranged in a straight line with each other across the frame. These axles (*l' l'*) are connected together by means of a combination of wheels known as "Houldsworth's differential mechanism"; but, in this instance, the bevel wheels *t'*, *t'*, are fast on the respective axles, and the center or main wheel, *t*, is loose on the inner ends of both the said axles, whereby, when rotary motion is given to the said main wheel (*t*), the truck wheels (*l*, *l*) are rotated either with equal or unequal velocity, as the direction of the movement of the truck (B) may require, without undue torsional strain upon either of the said axles, *l*, *l*. The required motion of the main wheel (*t*) is produced by means of the worm wheel (*u*), on shaft (*u'*), and the crank shaft *v*—connected together by means of the bevel wheels *w*, *w*.

On the outer end of crank-shaft (*v*) there is fixed a pulley *w'*, and on the shaft of the beater (A) there is also fixed a pulley *w''*. These pulleys are intended to be connected by means of a band, or chain; and a steam engine or other motive power is intended to be fixed upon the truck and connected with the crank-shaft (*v*) so as to give a rapid revolving motion to the beater (A) and, at the same time, a slow progressive movement to the truck (B).

The bearing-guides for the beater shaft, in the sill pieces (*g*, *g*) are made of such a depth therein as will allow the cylinders (*c*, *c*), when the beater is revolving, to reach down to the same plane in which the lowest edge or tread of the carrying wheels

move—as indicated by the dotted circle, *y*, in Fig. 2.

In the operation of this machine it will be perceived that, as the same moves along upon that portion of the pavement which may have been finished by its ramming, the revolving beater (A) brings its two cylinders (*c*, *c*) successively in contact with the "set" stones of the yet unrammed parts of the same, and, passing or rolling over and upon them, forces them down rapidly into the required compactness and solidity, and also to a straight line, longitudinally, with that part of the street on which the machine may be moving. The operator guiding the machine, either to the right or left, or in a straight line, by means of the hand lever (*s*), as occasion may require; and that, in case a short rise should be encountered in the grade of the street, the beater (A) may be readily raised in its guides so as to adapt it thereto, for the time, by the operator's simply bearing upon the lever (*i*) accordingly.

It is intended to make the cylinders (*c*, *c*,) of the beater (A), each about four or five feet long, and about 450 lbs. weight, and also to give their surfaces a slightly concave form, longitudinally, to allow for a corresponding counter-curve in the transverse surface of the street when the same requires such a curved form. It will, therefore, also be perceived that the cylinders (*c*, *c*), being of equal weights, and suspended from equal arms, will balance each other upon the shaft (*f*), and so render the action of the beater (A) more steady and uniform than could be the case were they of unequal weights, or if only one be applied; and also, that the power which drives the beater will be more effective for the work than if it were applied to an unbalanced beater, or to a vertically reciprocating hammer—to say nothing of the avoidance of the heavy jarring upon the sills of the truck, which the latter would produce.

The whole machine is simple in construction, and is also easily managed in its operation. It is also vastly more economical, and perfect in its effect, for the purpose designed, than the well known hand rammers heretofore used.

I wish it to be understood that I do not wish to claim the described arrangement and combination of the wheels *k*, *k*, and their respective axles and operating devices whereby the operator is enabled to "guide the machine as occasion may require"; but,

Having thus fully described my improved rammer, and pointed out its utility, what I claim therein as new of my invention, and desire to secure by Letters Patent is—

1. The revolving beater (A), the same being constructed and applied to operate substantially in the manner and for the purpose set forth and described.

2. In combination with the driving wheels (*l*, *l*,) of the truck (B), the combined arrangement of the differential mechanism *t*, *t'*, *t''*, the worm wheel *u*, and shaft *u'*; the same being made to operate together substantially in the manner and for the purpose set forth and described.

WILLIAM BEACH.

Witnesses:
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