

No. 795,905.

PATENTED AUG. 1, 1905.

J. GAMMIE.
MEANS FOR REMOVING ASPHALT PAVING.

APPLICATION FILED DEC. 2, 1904.

2 SHEETS—SHEET 1.

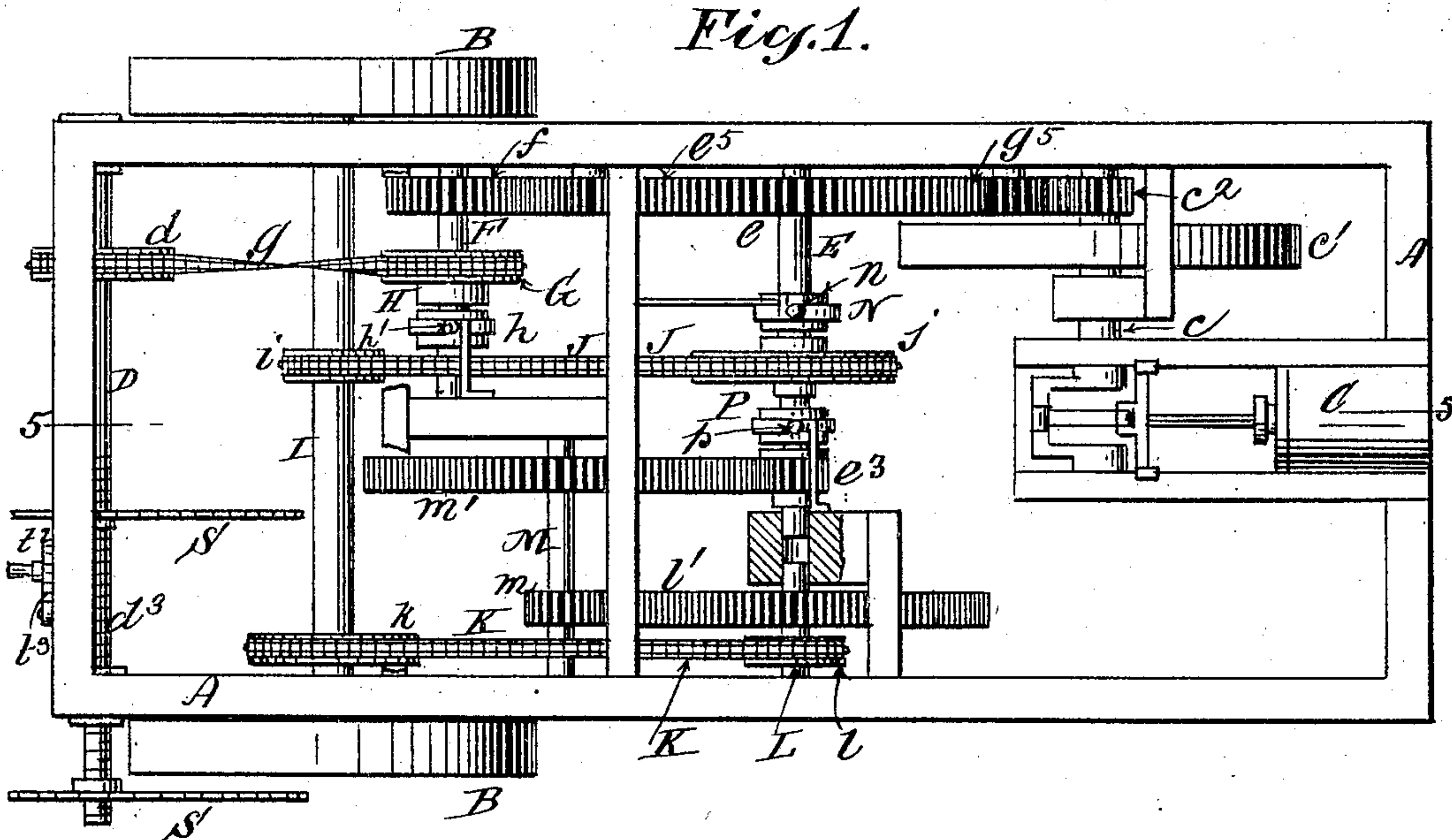


Fig. 2.

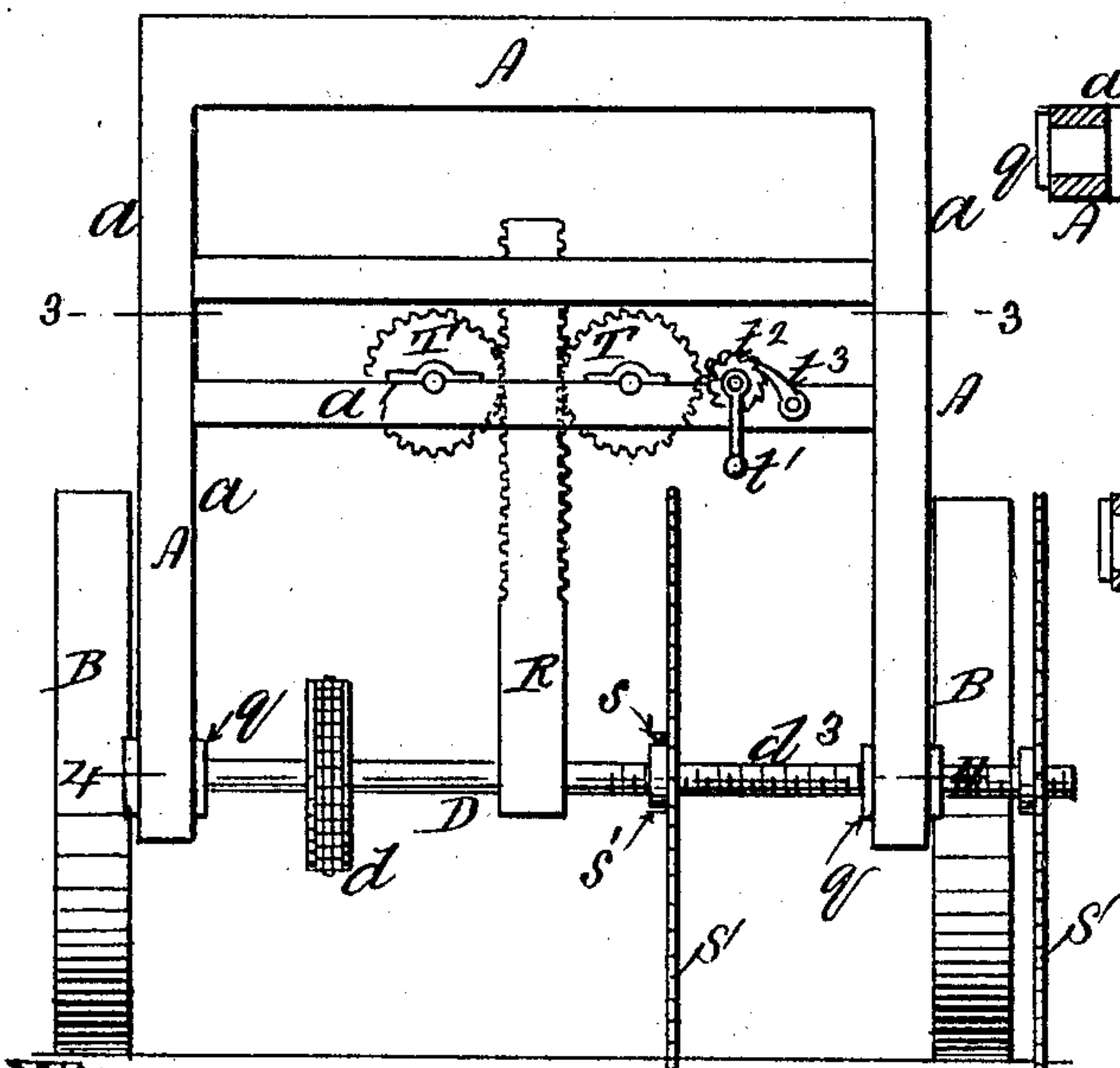


Fig. 3.

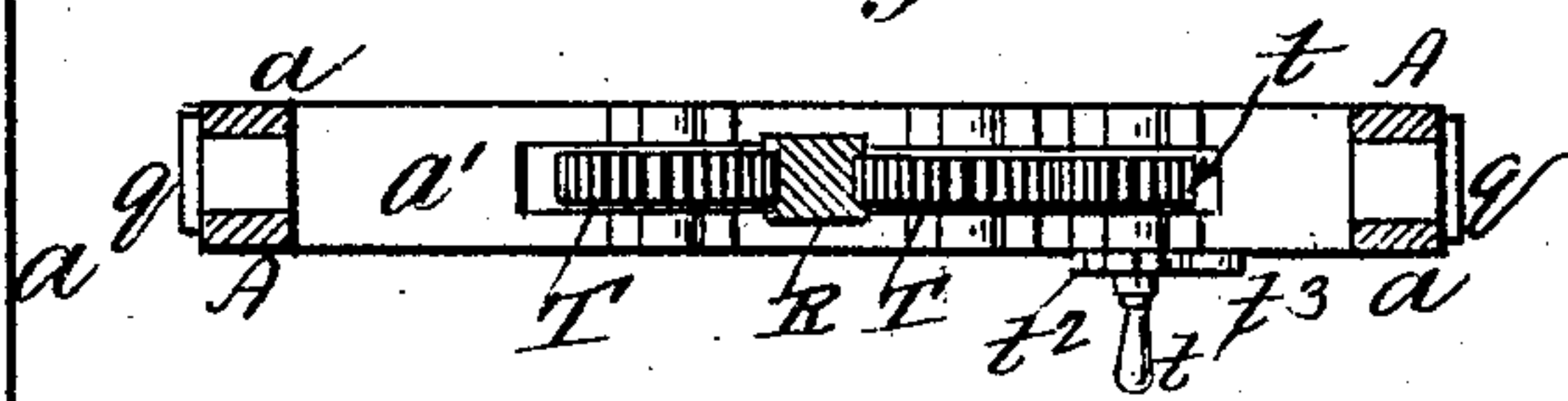
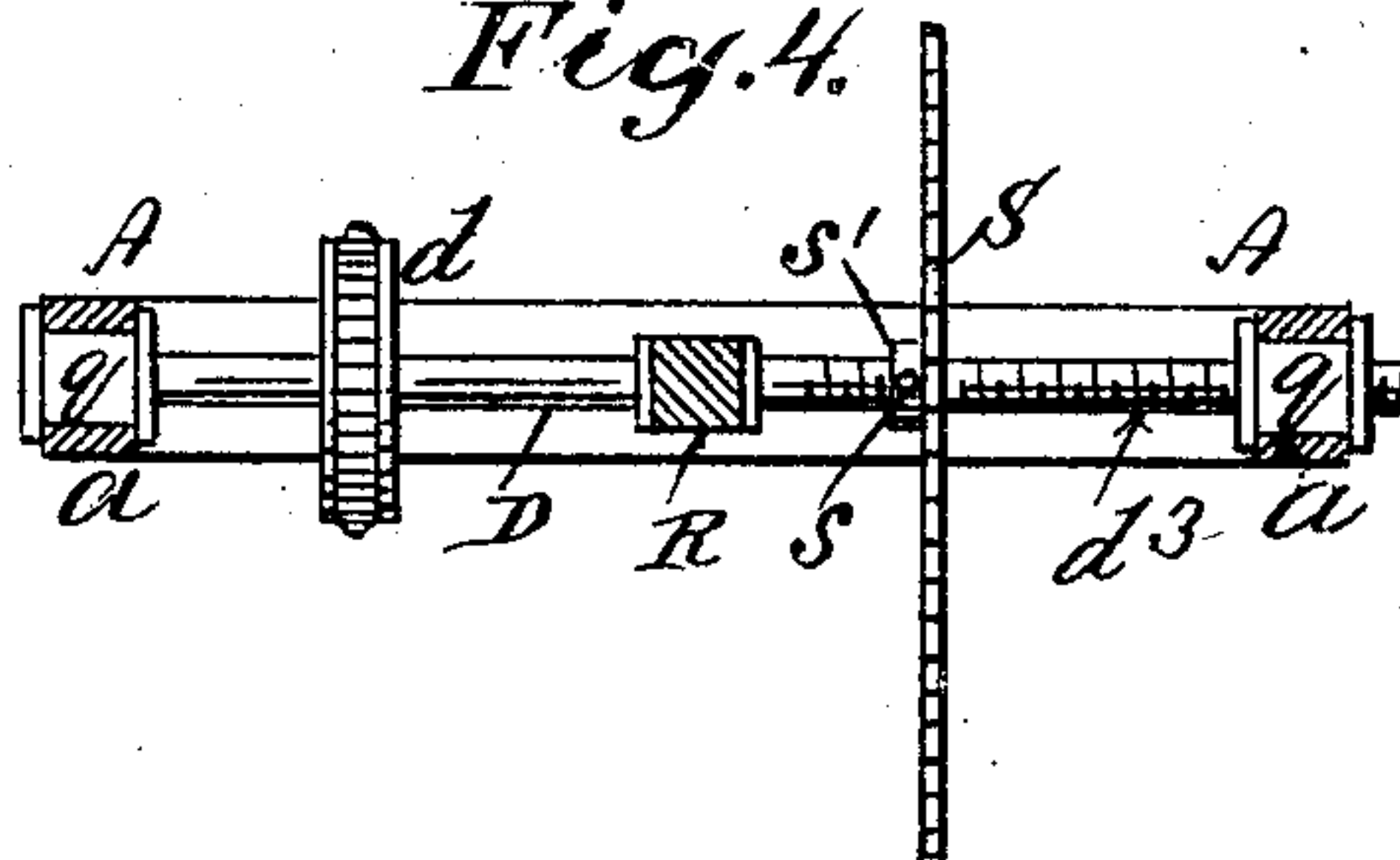


Fig. 4.



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Fig. 5.

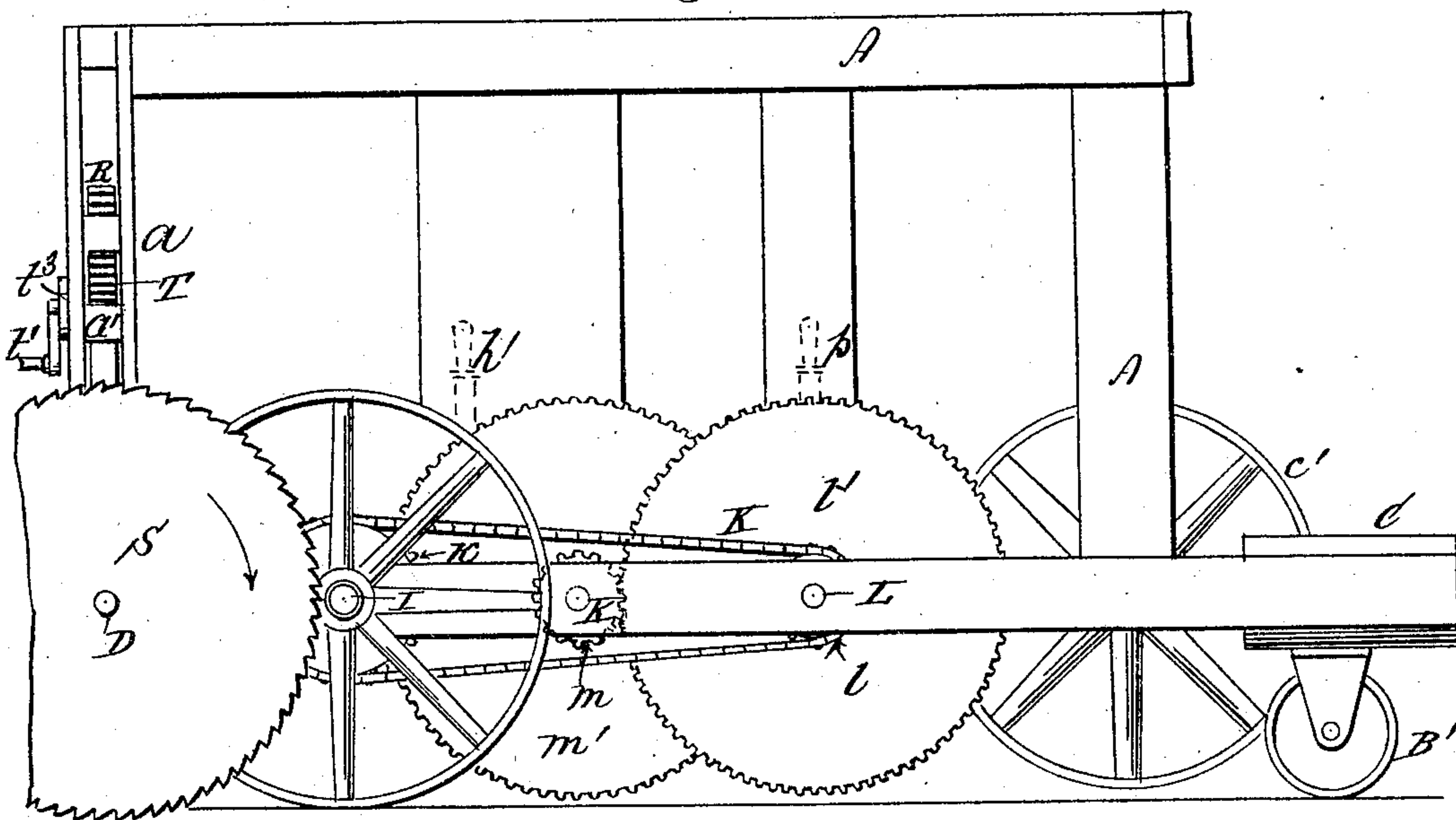
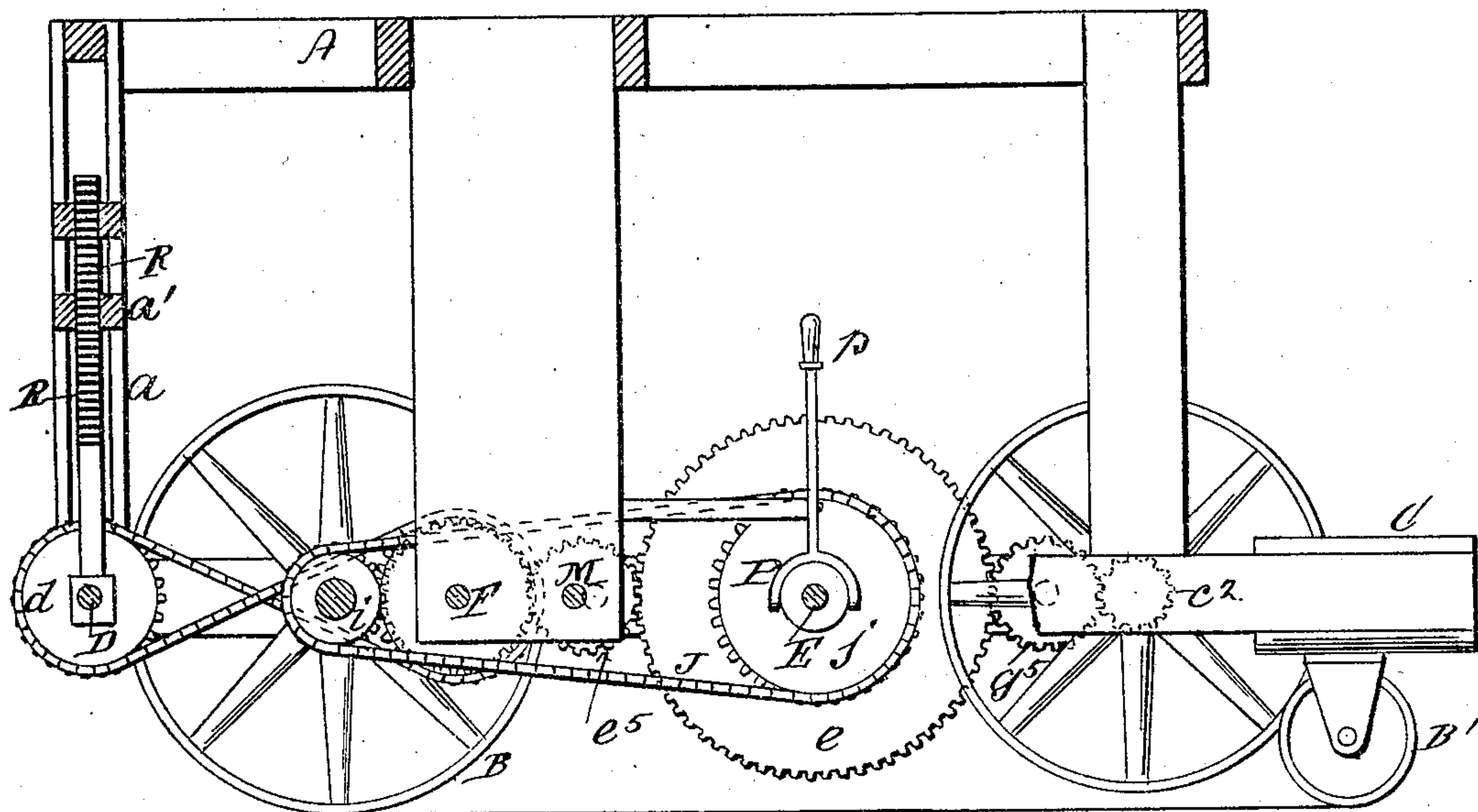


Fig. 6.



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UNITED STATES PATENT OFFICE.

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MEANS FOR REMOVING ASPHALT PAVING.

No. 795,905.

Specification of Letters Patent.

Patented Aug. 1, 1905.

Application filed December 2, 1904. Serial No. 235,168.

To all whom it may concern:

Be it known that I, JOHN GAMMIE, a citizen of the United States, residing in the city of New York, borough of Manhattan, county and State of New York, have invented certain new and useful Improvements in Means for Removing Asphalt Paving, of which the following is a specification sufficient to enable others skilled in the art to which the invention appertains to make and use the same.

My invention is designed to facilitate the opening up and removal of sections of asphalt paving when it is desired to make an excavation for any purpose. Heretofore the preliminary work has been done by cutting a line or lines marking the area to be opened up by means of a hand-chisel and hammer, a comparatively slow, tedious, and expensive operation.

My invention consists, essentially, in a vehicle, preferably self-propelling, provided with one or more rotatable saws mounted adjustably, so as to be readily lowered to or raised above the pavement, whereby the boundaries of an area of asphalt pavement designed for removal may be quickly and conveniently defined and the edges thereof separated from the portions of pavement adjoining.

My invention also involves certain features in the construction and arrangement of parts hereinafter described and claimed specifically.

In the accompanying drawings, Figure 1 is a plan of an apparatus embodying my invention; Fig. 2, a rear view of the same; Fig. 3, a horizontal section taken upon plane of line 3 3, Fig. 2; Fig. 4, a horizontal section taken upon plane of line 4 4, Fig. 2. Fig. 5 is a side elevation of the apparatus; Fig. 6, a vertical section upon plane of line 5 5, Fig. 1.

A represents the frame of a carriage or vehicle of any suitable construction, of which B B are the propelling-wheels and B' the steering-wheel.

C represents symbolically a motor, which may be of any type desired, mounted upon the frame A. The motor and connections are situated, preferably, at the front of the apparatus. The motor-shaft c is mounted in suitable bearings in the frame A and carries a fly-wheel c' and pinion c^2 .

D is a vertically-adjustable shaft mounted in suitable bearings supported adjustably in the frame A in the rear of the traction-wheels B B and carrying one or more saws S S, as well as a driving sprocket-wheel d . Intermediate between the driving sprocket-wheel

d and the pinion c^2 on the motor crank-shaft c and supported on the frame A are a series of gear and connections arranged to transmit motion from the motor-shaft to the saw-shaft, and this may obviously be accomplished by various combinations of gears and mechanical expedients, the arrangement herein shown being by way of illustration only. Thus g^5 is an idler mounted on the frame A and meshing with the pinion c^2 on one side and with the larger gear e on the counter-shaft F, which is maintained in suitable bearings, the larger gear e in turn meshing with the idler e^5 , which latter meshes with the smaller gear f , secured to a secondary counter-shaft F, also mounted in suitable bearings in the frame A. This secondary counter-shaft F also carries a loosely-mounted sprocket-wheel G, connected by the endless chain g with the driving sprocket-wheel d on the same shaft D, the chain being crossed so that the saws S S rotate in the direction of the arrow, Fig. 5. The relative proportions of the gears c^2 e f or of their equivalents will obviously determine the speed of rotation of the saws S S when the sprocket-wheel G is coupled to the shaft F. This latter operation is accomplished by any suitable clutch mechanism H, as by a clutch h , splined to the shaft E and controlled by a hand-lever h' in a well-known manner.

The traction-wheels B B are rigidly secured to an axle or shaft I, mounted in fixed bearings on the frame A of the apparatus, to which shaft power is applied either from the counter-shaft E direct through the medium of the sprocket-chain J or indirectly through the medium of the sprocket-chain K. The sprocket-chain J engages with a relatively large sprocket-wheel j , mounted loosely upon the counter-shaft E, and also with a smaller sprocket-wheel i on the traction-shaft I, the latter also having secured to it a relatively large sprocket-wheel k , which engages with the sprocket-wheel l on a third shaft L, mounted in suitable stationary bearings and in the present case, as shown in the drawings, in axial alinement with the shaft E. Secured to the shaft L is a large gear l' , which meshes into a pinion m on a fourth counter-shaft M, which also has secured to it a large gear m' , which meshes with the pinion e^3 , mounted loosely on the shaft E. By this arrangement provision is made for propelling the apparatus at two rates of speed. It being remembered that both the sprocket-wheel j and the pinion e^3 are mounted loosely on the shaft E, it is ob-

vious that whichever one is made to rotate therewith will govern the movement of the apparatus. Thus by throwing into engagement with the shaft E the sprocket-wheel *j* by means of the clutch mechanism N, splined to the shaft E and controlled by the hand-lever *n*, a relatively high rate of speed will be imparted to the traction-shaft I, since the sprocket-wheel *i* is less in diameter than the sprocket-wheel *j*. This speed is used for purposes of transportation and when the saws are not required for actual work. The other and slower or working speed is attained (the clutch N being disconnected from the sprocket-wheel *j*) by coupling the pinion *e*³ to the shaft E by means of the clutch mechanism P, controlled by the hand-lever *p*. This imparts a relatively slow movement to the traction-shaft, since it will be seen that the train of gears *e m' m l'* and sprockets *l* and *k* are arranged to indirectly and materially reduce the speed derived from the shaft E, as compared with the direct connection between the said shaft E and the traction-shaft I, through the medium of the sprocket-chain J. This arrangement of parts may be modified to afford any desired variation of speed by well-known mechanical expedients, and I do not limit myself to the construction and arrangement of parts shown in this connection.

Various mechanical expedients may also be resorted to in effecting the vertical adjustment of the saw-shaft D. In the drawings it is shown in vertical ways *a a* in the frame A, the shaft D, journals *q q*, &c., being raised and lowered by means of a vertical rack-bar R, the lower end of which clasps the shaft D centrally and the upper end of which is supported by and between gears T T, mounted in bearings on a cross-bar *a'* of the frame A, being actuated and controlled by a pinion *t* engaging with one of them, the shaft of the pinion being provided with a crank *t'* and with a ratchet-wheel *t*² for engagement with a sustaining-pawl *t*³, as will be seen by reference to Figs. 2 and 3. By this or equivalent means the shaft D and saws S S may be readily and conveniently raised or lowered or adjusted to any prescribed depth of cut.

One or more of the saws may be made adjustable horizontally along the shaft D by any suitable means, as by means of a set-screw *s*, passing through the hub *s'*, and to facilitate this lateral adjustment of a saw the shaft D may be threaded, as at *d*³, Fig. 4, the hub in this case being also correspondingly threaded and turning on the shaft D when the set-screw *s* is loosened.

In practice the saws are adjusted horizontally with relation to the width of a strip of asphalt to be removed, and when the proper section thereof has been approached by the apparatus they are lowered into position and the apparatus forced forward at a comparatively low rate of speed.

It is obvious that intermediate saws may be mounted upon the shaft D for the purpose of cutting up into still narrower strips the asphalt to be removed and that where a strip of considerable width is to be removed the apparatus may be used to cut up the same transversely as well as longitudinally to facilitate its removal.

It will be noted that the saw-shaft is at all times free to move upward should the saws encounter any unusual obstruction, it being only the downward movement of said shaft that is restricted.

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

1. In asphalt-cutting apparatus, the combination of a saw-shaft having one or more saws mounted upon it said shaft being mounted for free movement vertically upward at all times but restricted as to downward movement, a motor, and intermediate gearing connecting said motor with the saw-shaft, for the purpose described.

2. In asphalt-cutting apparatus, the combination of a saw-shaft having one or more saws mounted upon it said shaft being mounted for free movement vertically upward at all times but restricted as to downward movement, a motor, intermediate gearing connecting said motor with the saw-shaft, a traction-wheel shaft and traction-wheels and intermediate gearing connecting said traction-wheel shaft with said motor for the purpose described.

3. In asphalt-cutting apparatus, the combination of a saw-shaft mounted for free unrestricted vertical movement upward and restricted as to downward movement, and having one or more saws mounted thereon, means for adjusting a saw on said shaft longitudinally with relation to its axis, a motor, and intermediate gearing connecting said motor with said saw-shaft for the purpose described.

4. In asphalt-cutting apparatus, the combination of a saw-shaft having one or more saws mounted thereon, means allowing at all times freedom of upward movement of said saw-shaft vertically upon the frame of the apparatus means coöperating with said means for restricting the downward movement of said shaft, a motor, and intermediate gearing connecting said motor with said saw-shaft for the purpose described.

5. In asphalt-cutting apparatus, the combination of a saw-shaft having one or more saws mounted thereon, a motor intermediate gearing connecting said motor with the saw-shaft, a traction-wheel shaft and traction-wheels, and means embodying both gears and sprocket-wheels and chain interposed between said motor and the traction-shaft whereby the apparatus may be made to travel at different rates of speed.

6. In an asphalt-cutting apparatus, a frame, propelling-wheels, a motor at one end of said frame, a pinion on the motor-shaft, a saw-

shaft at the other end of said frame, saws on said shaft, a sprocket-wheel on the saw-shaft, a counter-shaft, a sprocket-wheel thereon, a sprocket-chain connecting said wheels, a gear on said counter-shaft, another counter-shaft intermediate the first-mentioned counter-shaft and the motor-shaft, a gear thereon meshing with said gears, a sprocket-wheel on the last-named counter-shaft, a sprocket-wheel on the shaft of the propelling-wheels, a sprocket-chain connecting said wheels, inversely-ar-

ranged sprocket-wheels and connecting-chain between the last-named counter-shaft and the axle of the propelling-wheels, and intermediate gearing, and a clutch in each of said counter-shafts, all substantially as and for the purpose specified.

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