

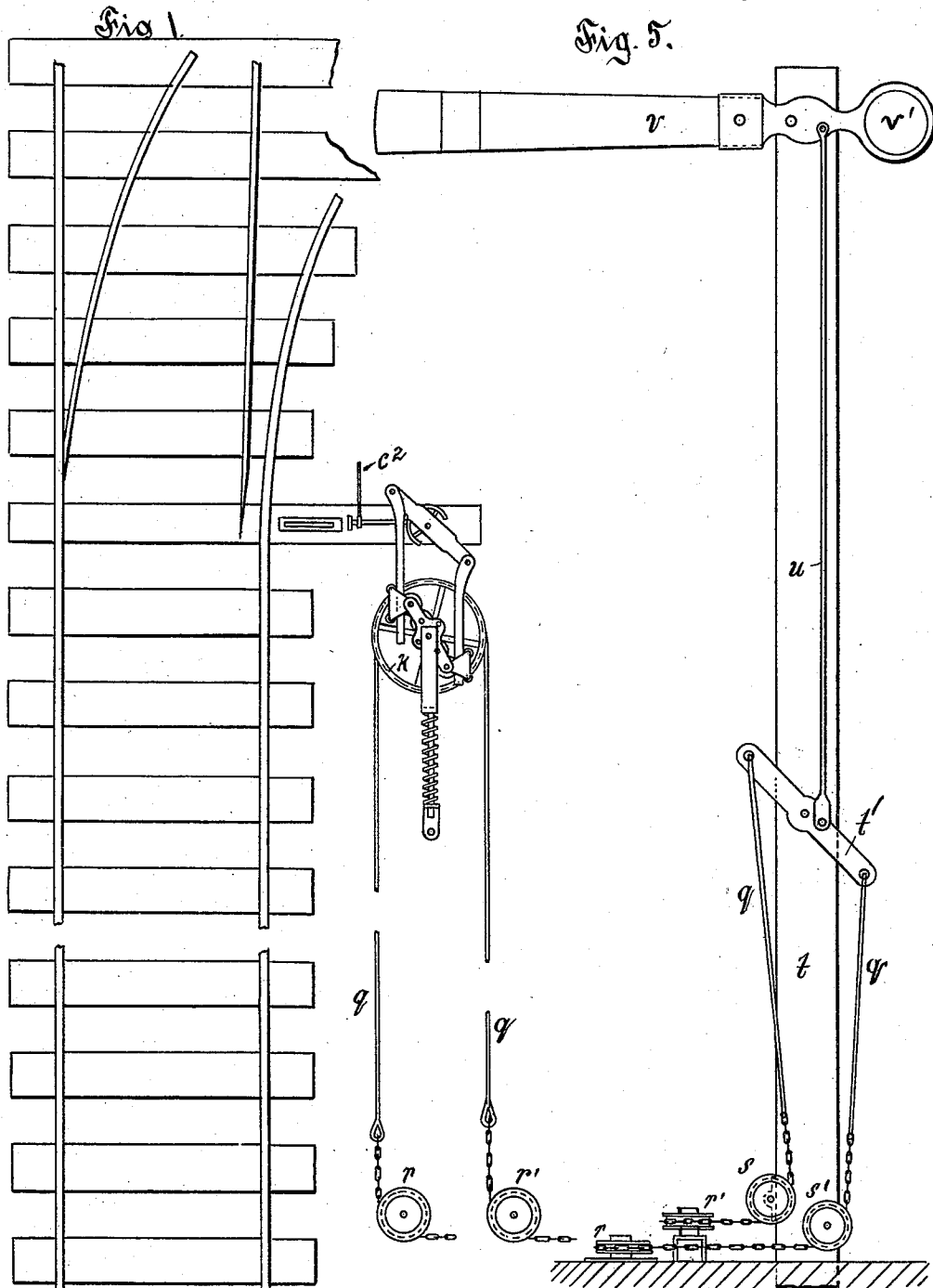
(No Model.)

2 Sheets—Sheet 1.

J. E. S. MEDSGER.
MECHANICAL MOVEMENT.

No. 543,258.

Patented July 23, 1895.



Witnesses.

Chas. J. Farrar.
Robert C. Totten

Inventor

Joseph E. S. Medsger
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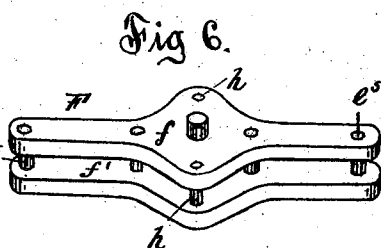
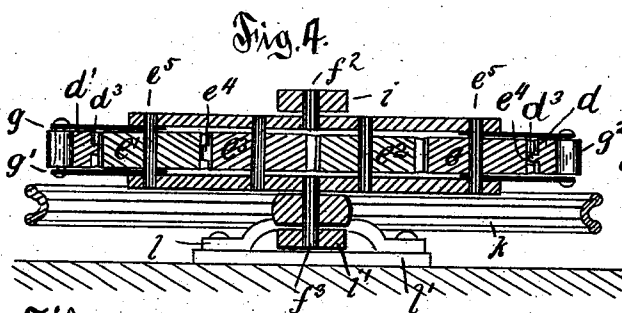
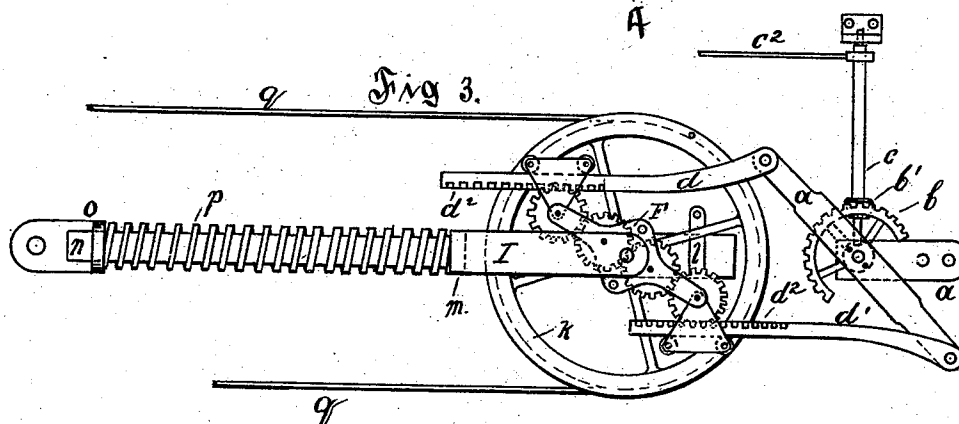
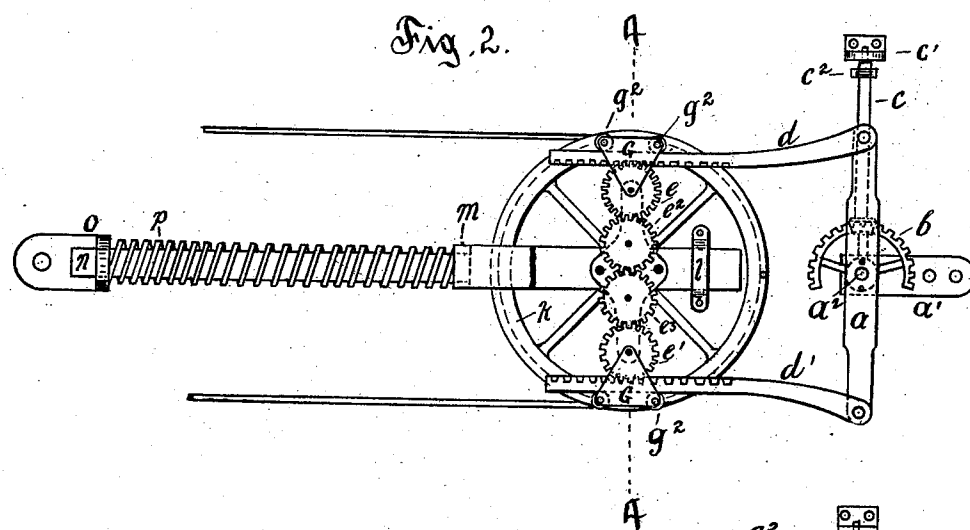
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UNITED STATES PATENT OFFICE.

JOSEPH E. S. MEDSGER, OF NEW FLORENCE, PENNSYLVANIA.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 543,258, dated July 23, 1895.

Application filed May 6, 1895. Serial No. 548,268. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH E. S. MEDSGER, a resident of New Florence, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful Improvement in Mechanical Movements; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a device for providing for the expansion and contraction or other variations between the terminal points of wires, cables, or rods, such as are employed for instance in the operation of railroad signals, whereby said wires, cables, or rods will always be held taut and always in condition to operate perfectly.

Great difficulty has been experienced heretofore in the operation of railroad-signals due to changes in the weather. The wires which operate these signals often extend several hundreds of yards from the point of operation to the signal and are exposed to all kinds of weather. The changes in temperature cause either the expansion or contraction of the wires, and unless the slack is taken up the signal may drop into such position as to deceive the engineer of a train, or when it is attempted to raise the signal said signal will not rise to its proper height. It has been necessary therefore to provide for a careful inspection of these wires, and men are employed for the purpose of taking up the slack or letting out the wires according as the temperature may act upon them. For this purpose swivels have been located at certain points on the wires, which have to be tightened up or loosened according as the wires expand or contract. By my invention I propose to provide mechanism which will hold the wires taut without any attention on the part of the employés.

My invention comprises, generally stated, a mechanical movement consisting of a swinging bar having rack-bars connected thereto, said rack-bars meshing with two or more meshing pinions mounted on a spring-actuated yielding frame, and a wire, cable, or rod leading from said frame to mechanism for operating the signal or other devices.

To enable others skilled in the art to make and use my invention, I will describe the

same more fully, referring to the accompanying drawings, in which—

Figure 1 is a plan view of a railroad-track, showing my invention in connection therewith. Fig. 2 is an enlarged plan view of the operating mechanism. Fig. 3 is a like view showing same in another position. Fig. 4 is a section on line 4 4, Fig. 2. Fig. 5 is a side view of a signal-post. Fig. 6 is a detail of the frame which carries the meshing pinions.

Like letters of reference indicate like parts in each of the figures.

By way of illustrating one of the practical applications of my invention, I have illustrated it as applied to a common form of signaling apparatus, but, of course, it is applicable to other devices.

The bar *a* is pivoted to a suitable block *a'* by the pivot-pin *a²*. Secured to the bar *a* is the toothed sector *b*, which is engaged by the teeth of the gear-wheel *b'* mounted on the shaft *c*. This shaft *c* is journaled in suitable bearings in the block *a'* and in the standard *c'*. The shaft *c* has the operating-lever *c²*. Any other suitable form of mechanism for turning the bar *a* may be employed.

Pivoted to the bar *a* are the rack-bars *d d'*, which have the teeth *d²*. I prefer to construct said rack-bars with an upper and lower set of teeth with the intervening strip *d³*, for the purpose more fully hereinafter set forth. Meshing with the teeth *d²* of the rack-bars *d d'* are the pinions *e e'* mounted in the pinion-frame *F*, said pinions *e e'* in turn meshing with the pinions *e² e³* on same frame. Although I have shown four pinions mounted in the frame *F*, I do not confine myself to that number, as I may use any even number according to the amount of purchase desired. Small wheels take up less travel on the rack-bars. The outer pinions *e e'* are formed with the grooves *e⁴* with which the strips *d³* of the rack-bars *d d'* engage. This construction insures a secure engagement between the teeth of the pinions and those of the rack-bar and prevent their slipping out of gear.

In order to hold the rack-bars in engagement with the pinions *e e'* clamps *G* are provided, said clamps being composed of the upper and lower plates *g g'*, which embrace the rack-bars *d d'* and pinions *e e'*. The plates *g*

g' are mounted on the pinion-shafts e^5 in the frame F. At the outer edges of the plates g g' are journaled the rollers g^2 , which move in contact with the outer faces of said rack-bars.

5 The clamps G may vary in construction, and I do not confine myself to the particular construction illustrated.

The frame F which carries the pinions ee' e^2 e^3 is composed of the plates ff' , and said 10 plates are held rigidly together by the pillars h . These pillars h are secured to the plates ff' in any manner which will hold said plates securely together. The connection between the two plates ff' is further strengthened by 15 the pinion-shafts e^5 . The plates ff' have the studs f^2 f^3 , said stud f^2 being journaled in the bar i of the yielding frame I, and said stud f^3 being journaled in the bar i' of said frame. Furthermore, the stud f^3 has mounted thereon 20 the pulley-wheel k .

The lower bar i' of the yielding frame I is adapted to move in the guide l secured to the base l' . The bars i i' of the frame I are connected by the block m , from which the rod n 25 projects. This rod n fits within an opening in the abutment o . A spring p is interposed between the block m and the abutment o . Where a flexible connection between the yielding frame and the contrivance to be operated is employed, the wire q , or chain, or cable, as the case may be, passes around the 30 pulley-wheel k , being secured thereto, and thence to the pulleys r r' , which may be several hundred yards distant. The wire q then passes to the pulleys s s' at the base of the signal-post t . One end of said wire is secured to the outer end of the lever t' , and the other end of said wire is secured to the inner 35 end of said lever. The lever t' is connected by the rod u with blade v , which is to be raised or lowered according to the signal to be given. The blade v is also provided with the signal-light v' .

When my invention is in use and it is desired to raise the signal-blade v , the lever c^2 45 is thrown in the proper direction, whereupon the gear-wheel b' meshing with the toothed sector b will turn the bar a on its pivotal point, when said bar will assume the position shown 50 in Fig. 2, for instance. In this position of the bar a the signal-blade would be at about an angle of forty-five degrees. The farther turning of the bar a will cause one of the rack-bars d d' to advance and the other to recede, as 55 shown in Fig. 3. The rack-bars meshing with the pinions ee' will turn the frame F and consequently the pulley-wheel k . As the wire q is attached to said pulley-wheel k any movement on the part of said pulley-wheel will operate 60 the lever t' on the signal-post. No matter in what position the signal-blade may be the spring p will always hold the wire taut. In case the weather is very cold and the wire contracts the spring p will be compressed and the frame I will yield. As the frame I yields 65 the pinions ee' will move along the rack-bars and thus allow for the contraction of the wire.

On the contrary, if the weather is warm and the wire expands the spring p will force back the yielding frame I and take up any slack 70 in the wire, while the pinions will as before travel in the racks as said frame I is forced back. No matter at what angle the pinion-frame F may be the pinions will travel in the rack-bars and permit of the movement back 75 and forth of the yielding frame as the wire expands or contracts.

I do not confine my invention to the particular purpose of operating signals, but include in its scope all other contrivances to 80 which it may be applied with like results.

The mechanism composed of the rack-bars and pinions meshing therewith can be applied to other contrivances in which it is desired to provide for the expansion and contraction or 85 any variations between the terminal points of operating wires, cables, or rods, and I propose to file this application for patent for the same broadly as a mechanical movement.

What I claim as my invention, and desire 90 to secure by Letters Patent, is—

1. In a mechanical movement for providing for the expansion and contraction, or variations between the terminal points of operating wires, cables or rods, the combination of 95 a swinging bar, rack-bars connected thereto, a yielding frame, an even number of pinions mounted in said frame, said pinions meshing with each other, and with said rack-bars, and connections between said yielding frame and 100 the contrivance to be operated, substantially as set forth.

2. In a mechanical movement for providing for the expansion and contraction, or other variations between the terminal points of operating wires, cables, or rods, the combination of 105 a swinging bar, rack-bars connected thereto, a spring actuated yielding frame, an even number of pinions mounted in said frame, said pinions meshing with each other and with 110 said rack-bars, and connections between said yielding frame and the contrivance to be operated, substantially as set forth.

3. In a mechanical movement for providing for the expansion and contraction or variations between the terminal points of operating wires, cables, or rods, the combination of 115 a swinging bar, rack-bars connected thereto, a spring actuated yielding-frame, a pinion-frame journaled in said yielding frame, an even number of pinions mounted in said pinion frame, said pinions meshing with each other and with said rack-bars, and connections between said yielding frame and the 120 contrivance to be operated, substantially as set forth.

4. In a mechanical movement for providing for the expansion and contraction, or variations between the terminal points of operating wires, cables or rods, the combination of 130 a swinging-bar, rack-bars connected thereto, a spring actuated yielding frame, a pinion frame journaled in said yielding frame, an even number of pinions mounted in said pin-

ion-frame, said pinions meshing with each other and with said rack-bars, a pulley wheel on said pinion-frame, and connections from said pulley wheel to the contrivance to be operated, substantially as set forth.

5 5. In a mechanical movement for providing for the expansion and contraction, or variations between the terminal points of operating wires, cables, or rods, the combination of
10 a swinging bar, a curved rack-bar connected to said swinging bar, a gear wheel meshing with said rack-bar, rack-bars connected to said swinging bar, a yielding frame, an even number of pinions mounted in said frame,
15 said pinions meshing with each other and with said rack-bars, and connections between said yielding frame and the contrivance to be operated.

6. In a mechanical movement for providing for the expansion and contraction, or variations between the terminal points of operating wires, cables, or rods, the combination of a swinging bar, rack-bars connected thereto, a yielding frame, an even number of pinions mounted in said frame, said pinions meshing
20 with each other and with said rack-bars, sliding clamps for holding said pinions and rack-bars in engagement, and connections between said yielding frame and the contrivance to be operated, substantially as set forth. 30

In testimony whereof I, the said JOSEPH E. S. MEDSGER, have hereunto set my hand.

JOSEPH E. S. MEDSGER.

Witnesses:

ROBT. D. TOTTEN,
ROBERT C. TOTTEN.