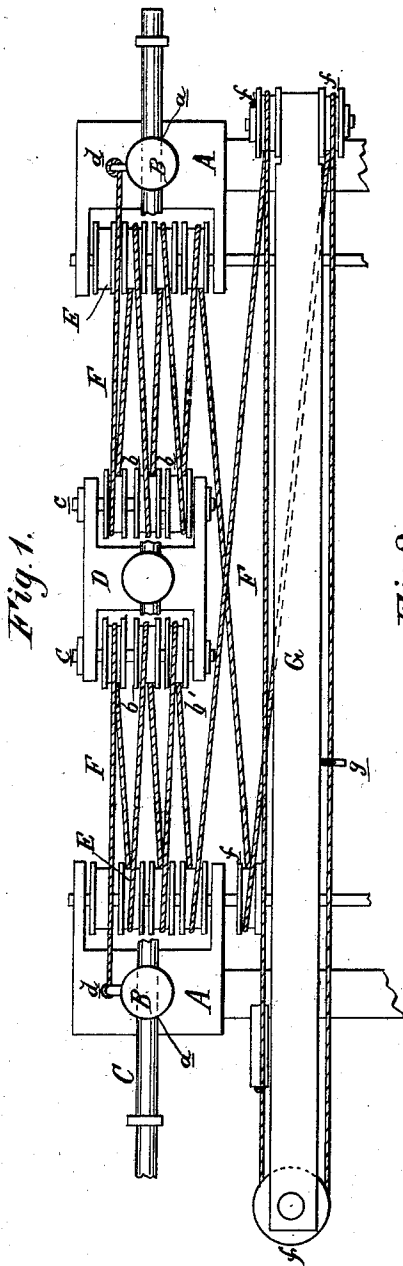
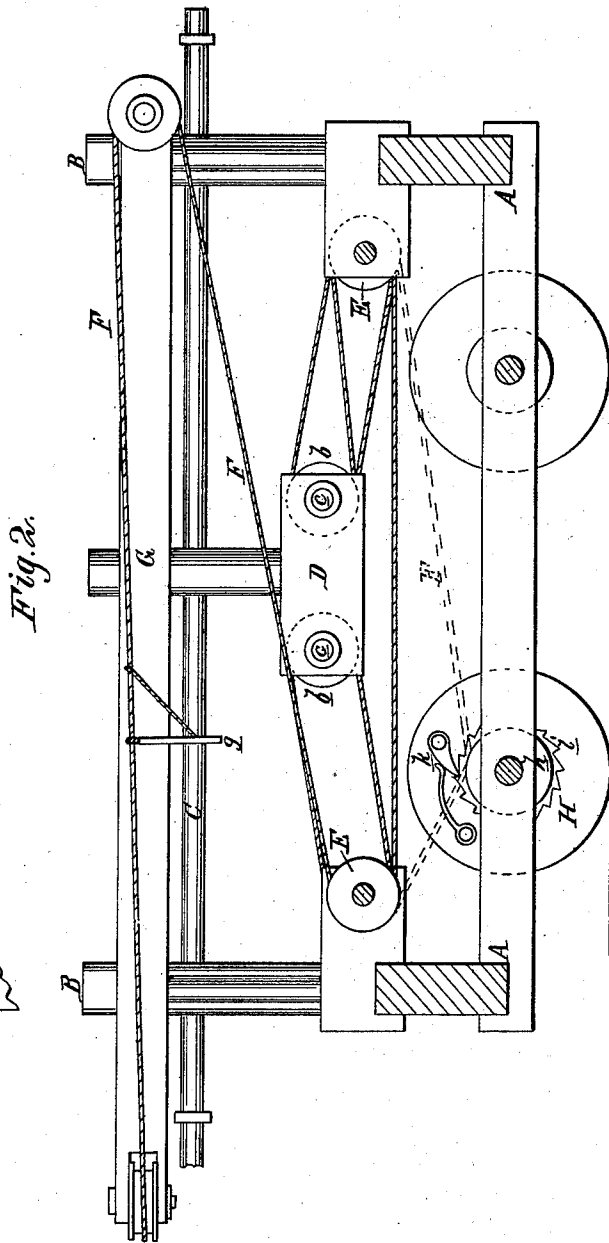


J. SCHOFIELD.
Speed-Accelerator.
No. 222,742. Patented Dec. 16, 1879.



WITNESSES:

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C. Sedgwick

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Fig. 3.

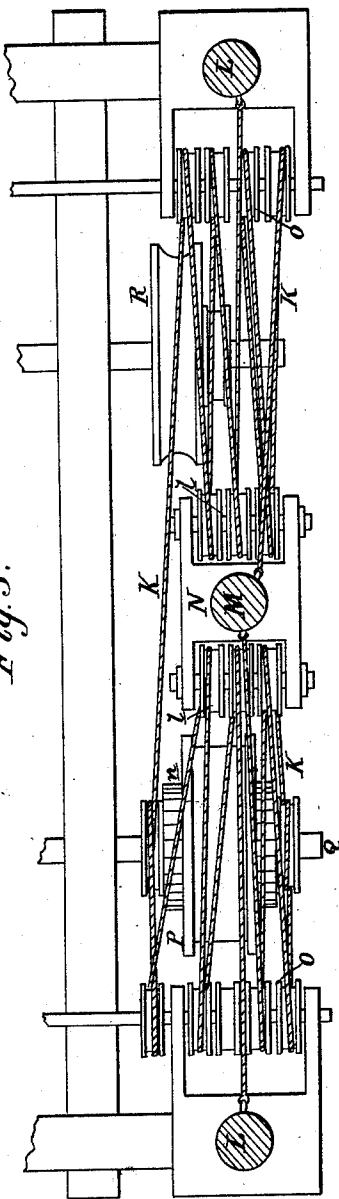


Fig. 4.

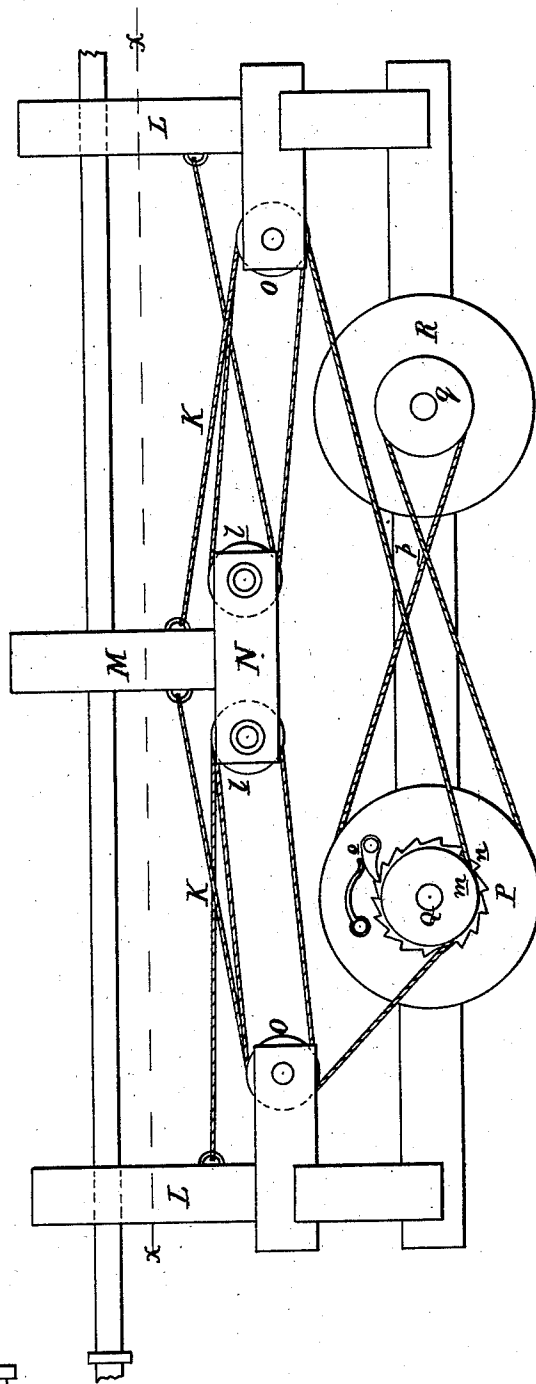
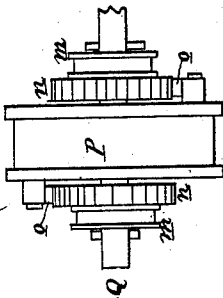


Fig. 5.



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JAMES SCHOFIELD, OF NEW YORK, N. Y.

IMPROVEMENT IN SPEED-ACCELERATORS.

Specification forming part of Letters Patent No. **222,742**, dated December 16, 1879; application filed October 4, 1879.

To all whom it may concern:

Be it known that I, JAMES SCHOFIELD, of the city, county, and State of New York, have invented a new and Improved Speed-Accelerator, of which the following is a specification.

Figure 1 is a partial plan of the device, showing it as applied to produce intermittent or reciprocating motion. Fig. 2 is a rear elevation of the parts shown in Fig. 1. Fig. 3 is a partial plan of the device, showing it as applied to produce a continuous or rotary motion. Fig. 4 is a front elevation of the parts shown in Fig. 3. Fig. 5 is a peripheral elevation of the double-gear wheel.

Similar letters of reference indicate corresponding parts.

The object of this invention is to convert slow or slight motion into rapid or extended motion by the intervention of ropes or chains and sheaves, for the purpose of propelling boats, vehicles, machinery, and the like.

The invention consists, essentially, of a sliding carriage containing several sheaves, and fixed on a reciprocating rod, while over said sheaves and sets of corresponding standing sheaves fixed opposite, and at a distance, a rope or chain is passed back and forth in such a manner that a slight movement of the carriage will produce a very extended or accelerated movement of the bight of the rope or chain, or of objects attached to it.

In the drawings, A represents frame-work designed for the support of the mechanism. In Figs. 1 and 2, B B are standards provided with holes *a*, in which the rod C is supported and moves. D represents the sliding carriage, firmly fixed on the rod C, and provided with sheaves *b*, that revolve on the pins *c*. E represents the groups of standing sheaves, that are fixed in convenient and opposite parts of the frame A. F represents the rope or chain, whose ends are made fast to the standards B B at *d*, while the rope or chain F itself is passed, as shown, back and forth over the sheaves *b* E.

In this instance, and in order to demonstrate the operation of the device, the bight of the rope F is passed over the sheaves *f f* and along the bar G, which latter may represent

the keel of a steamboat, while the floats *g*, that "feather" when moving in one direction and oppose their full surface when moving in the other, may represent the propellers. Then, when the carriage D is moved a short distance by the rod C, (which rod C may represent the piston-rod of an engine,) it is seen that the floats *g* move through a much greater space, and as a reciprocating motion is given to the carriage D the floats or propellers *g* also move with a reciprocating motion.

If the bight of the rope F be passed around the pulley *h*, as shown in dotted lines in Fig. 2, a forward motion of the carriage D will give motion to the wheel H through the medium of the ratchet *i* and pawl *k*, while on the reverse motion of the carriage D the wheel H will remain stationary, because of the disengagement of the pawl *k* from the ratchet *i*.

In Figs. 3 and 4 what may be called a "double-gear device," in contradistinction to Figs. 1 and 2, is shown. In these figures two ropes or chains, K, are used, the one being made fast at one of the standards L and terminating at the other standard, while the other rope, K, is made fast on one side of the post M, that supports the carriage N, and, after passing over some of the sheaves, terminates on the opposite side of the said post M. In this case the principle of gearing is the same as shown in Figs. 1 and 2, and the result is the same, excepting that for a like movement of the carriage N, with its sheaves *b*, more extended or accelerated motion is obtained by the bight of the ropes, because of the increased number of turns made by the ropes K over the sheaves O, the relative speed of the bights of the ropes K as compared with that of the carriage N being determined by the number of sheaves over which the said ropes pass.

P represents a double-gear wheel, set with a sheave, *m*, and a ratchet, *n*, on each side of it on the axle Q. A bight of one of these ropes K, that hangs between the sheaves E E, is put around the sheave *m*, so that when the carriage N is put in reciprocating motion the said wheel P, by means of the pawls *o* and ratchets *n*, has imparted to it a constant rotary motion, which

rotary motion may be transmitted, as shown, by cord or belt *p*, to the sheave *g*, that is connected with the pulley or truck *R*. This pulley *R* may serve as a driving-pulley for machinery.

It is obvious, then, that by means of this gearing of ropes and sheaves a slow motion at the point of applied force results in a greatly-accelerated motion at the point where the force is to be utilized; and it is also obvious that this combination of ropes and sheaves or pulleys can be successfully applied to the propelling of wagons, to the running of machinery of various kinds, to the propelling of boats, to the transfer of packages from one place to another, and to various other purposes.

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

1. The sliding carriage *D*, provided with sheaves *b*, in combination with the rope or chain *F*, standards *B B*, and standing sheaves *E*, substantially as and for the purpose specified.

2. The sliding carriage *N*, provided with sheaves *l*, in combination with the ropes *K* and standing sheaves *o*, substantially as herein shown and described.

3. The double-gearred pulley *P*, pulley *R*, carriage *N*, and ropes *K*, combined substantially as and for the purpose described.

JAMES SCHOFIELD.

Witnesses:

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C. SEDGWICK.