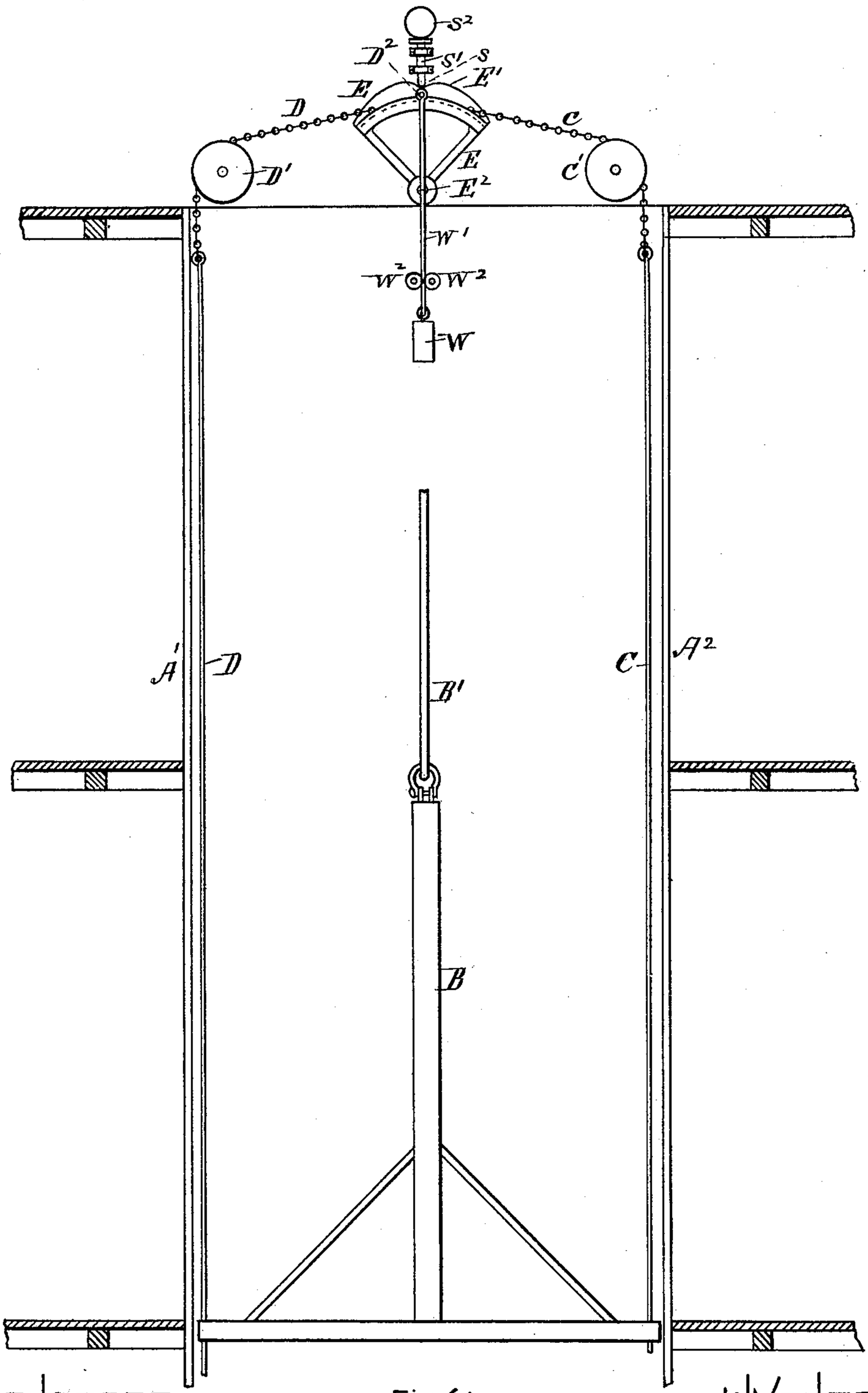
(No Model.) 2 Sheets—Sheet 1.

W. E. NICKERSON.

BELT SHIFTING APPLIANCE FOR ELEVATORS.

No. 403,690. Patented May 21 1889.



WITNESSES.
Frank G. Parker.
Matthew M. Blunt.

Fig. 1.

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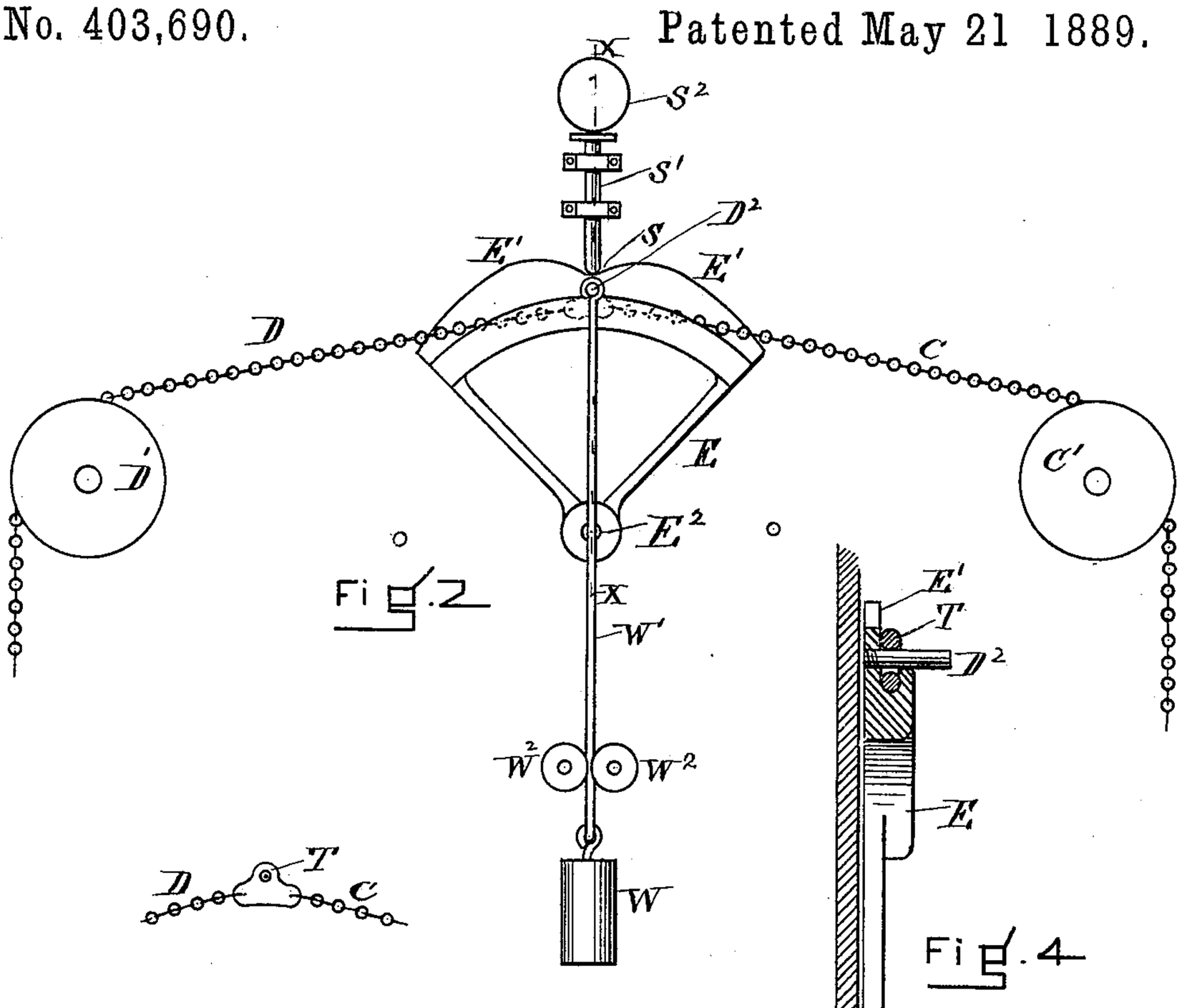

Fig. 2.

Fig. 3.

Fig. 4.

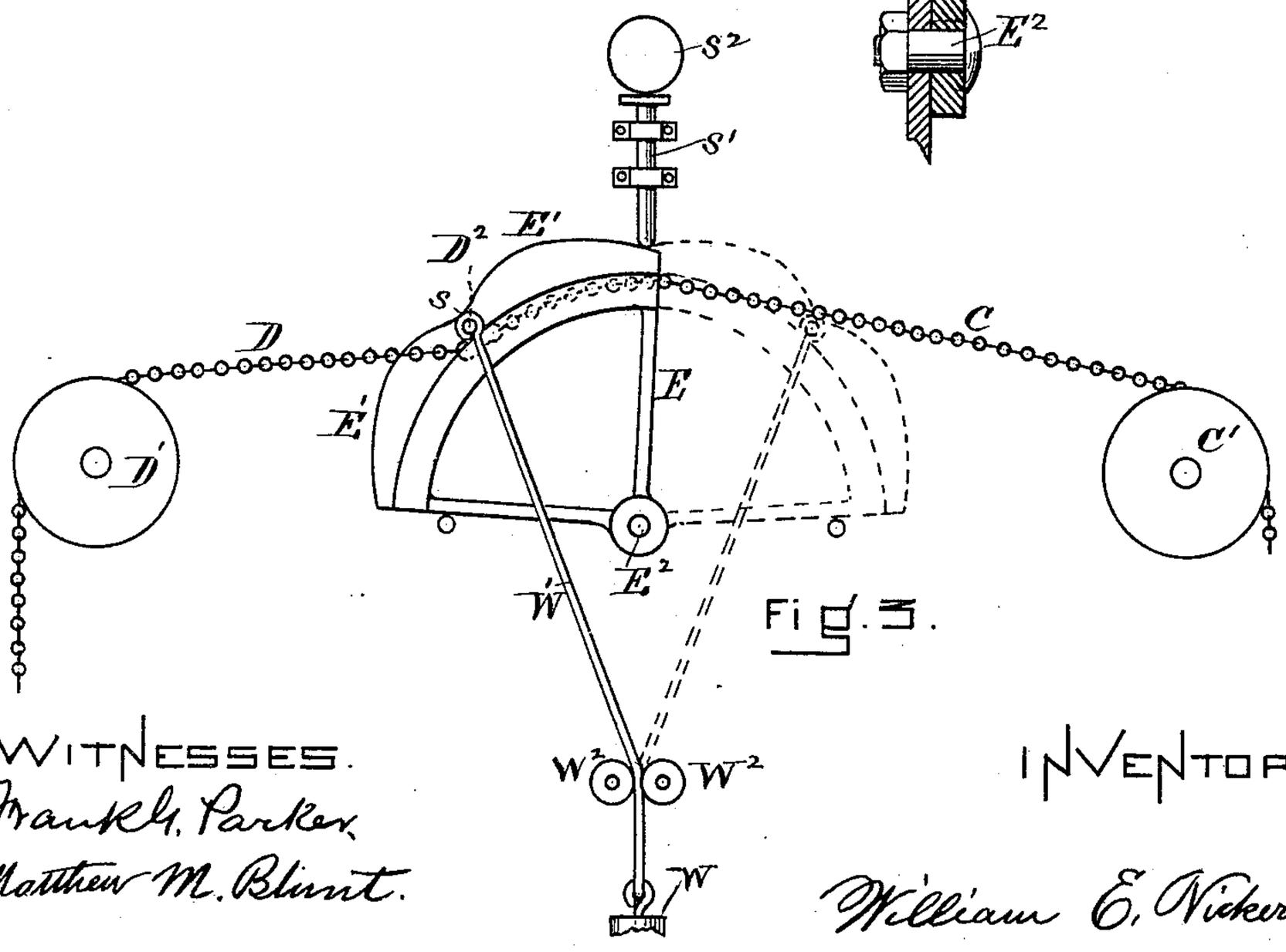

Fig. 5.

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WILLIAM E. NICKERSON, OF CAMBRIDGE, MASSACHUSETTS.

BELT-SHIFTING APPLIANCE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 403,690, dated May 21, 1889.

Application filed February 7, 1889. Serial No. 299,077. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM EMERY NICKERSON, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Belt-Shifting Appliances for Elevators, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to that class of elevators in which belts are used for giving motion to the hoisting mechanism; and it consists in a device by which the attendant may know by resistance offered to the movement of the shipping rope or chain the position of the belts in relation to their respective pulleys, the object being to assist and admonish the attendant in the manipulation of the shipping-ropes. This object I attain by the mechanism shown in the accompanying drawings, in which—

Figure 1 is a view in elevation showing such parts as are required for the illustration of my invention. Fig. 2 is an elevation showing the essential features of my device, the position of the parts being such as they would occupy when the elevator-carriage is at rest. Fig. 3 is an elevation showing the essential parts of my device when they occupy the position that they do while the elevator-carriage is in motion. If we assume that the parts are in the position represented in Fig. 3 while the elevator-carriage is going up, then the parts would be in the position indicated by the dotted lines when the elevator-carriage is going down, or vice versa. Fig. 4 is a cross vertical section taken on line *x x* of Fig. 2, and Fig. 5 is an elevation of a detail.

In Fig. 1 I have shown the side posts, A′ A², of the elevator carriage or car B and the hoisting rope or chain B′ in an outline form only, as they do not require any minute description, not being novel.

I have not shown the hoisting mechanism at all, as that is supposed to be of the ordinary arrangement of a winding-drum driven by means of belts working on fast and loose pulleys, the motion of which is imparted to the winding-drum by means of suitable intermediate transmitting devices.

D and C, Figs. 1, 2, 3, and 5, designate the shipping ropes or chains. These pass over their respective pulleys D′ and C′ and are united to the eye-piece T, (see Figs. 4 and 5,) which is connected to the central part of the switch-piece E by a strong stud, D². The stud D² also serves as a support for the rope W′, upon the lower end of which I have a heavy weight, W, (or an equivalent spring.) The rope W′ is held in position by the guide-pulleys W² W².

It will be observed that when the switch-piece E (which swings on the pivot E²) is vertical, as shown in Figs. 1 and 2, the weight W, acting through the rope W′, has no tendency to move it in either direction, but that when it has been moved in either direction—to the left, for instance, as shown in Fig. 3—then the weight W will exert a force upon it that will cause it to move still farther from its vertical position, and will have a tendency to hold it in its extreme right or left stopping-place, the use of which tendency will be referred to below.

Extending above at each side of the center of the switch-piece E are two cam-shaped wings, E′ E′, at the junction of which is a notch with sloping sides, as indicated at S, Figs. 1, 2, and 3.

S′ is a rod having a vertical motion, and has at its top a weight, S², which serves to press the rod S′ down so as to bear on the periphery of the wings E′ E′ or in the notch S, according to the position that the switch-piece E holds in relation to it.

From the shape of the wings E E′ it will be seen that the rod S′ will offer considerable resistance to the movement of the switch-piece from its central position, as the slopes in either direction are quite abrupt, and that the rod S′ will offer but slight resistance to the movement of the switch-piece when once out of the notch S. When the switch-piece E takes the form of a slide, as it may in some cases, then the rope W′ should have in its place a flat spring adapted to hold the slide centrally, except when forced to one side or the other by the strain on the shipping-ropes.

The operation of my device is as follows: We will assume that the elevator-carriage is started upward by pulling down the rope D, and downward by pulling down the rope C. Now by pulling the rope D down we draw the switch-piece E over toward the left hand, and as soon as it has gone far enough to raise the

bolt S′ out of the notch S the weight W, acting through the rope W′, will throw it over to the extreme position indicated by the full lines in Fig. 3, thus making sure the belt is moved fully and completely onto its proper pulley, where also the tension of the rope W′ tends to hold it until moved back by the operator and the carriage is started upward. To stop the elevator-carriage, the rope C is pulled down until the checking effect of the bolt S′ is felt, (which will be when the switch-piece E is brought to the position shown in Fig. 2, and in which position the rod S′ enters the notch S and has a tendency to resist the further motion of the switch-piece,) and also tends to bring it to the correct central position if left slightly out by the hand of the operator, thus preventing one belt or the other from being left on stopping the elevator, so that an edge of the belt is rubbing on the edge of the fast pulley, causing much wear on the belt and a serious loss of power, and the carriage is stopped. To start the carriage in its downward motion, the rope C is again pulled down, when the same forces as before acting to the right will assure the complete movement of the switch-piece to the extreme position indicated by the dotted lines, Fig. 3, with the same advantages as in its movement to the left.

My invention is to arrange a mechanism to assist the attendant in placing the belt in the right position, and to indicate to him that the right position has been reached and that the belts are running without waste of power or injury to themselves or to the machinery.

I claim—

1. In an elevator-controlling mechanism, the combination of the chains D and C with the switch-piece E and sliding rod S′, substantially as and for the purpose set forth.

2. In an elevator-controlling mechanism, the combination of the chains D and C with the switch-piece E, weight W, and rope W′, substantially as described, and for the purpose set forth.

3. In an elevator-controlling mechanism, the combination of the chains D and C with the switch-piece E, sliding rod S′, weight W, and rope W′, substantially as and for the purpose set forth.

WILLIAM E. NICKERSON.

Witnesses:
FRANK W. ALDEN,
FRANK G. PARKER.