

(No Model.)

2 Sheets—Sheet 1.

J. W. LIVINGSTON.

SANDING APPARATUS FOR STREET CARS.

No. 360,600.

Patented Apr. 5, 1887.

Fig. 1.

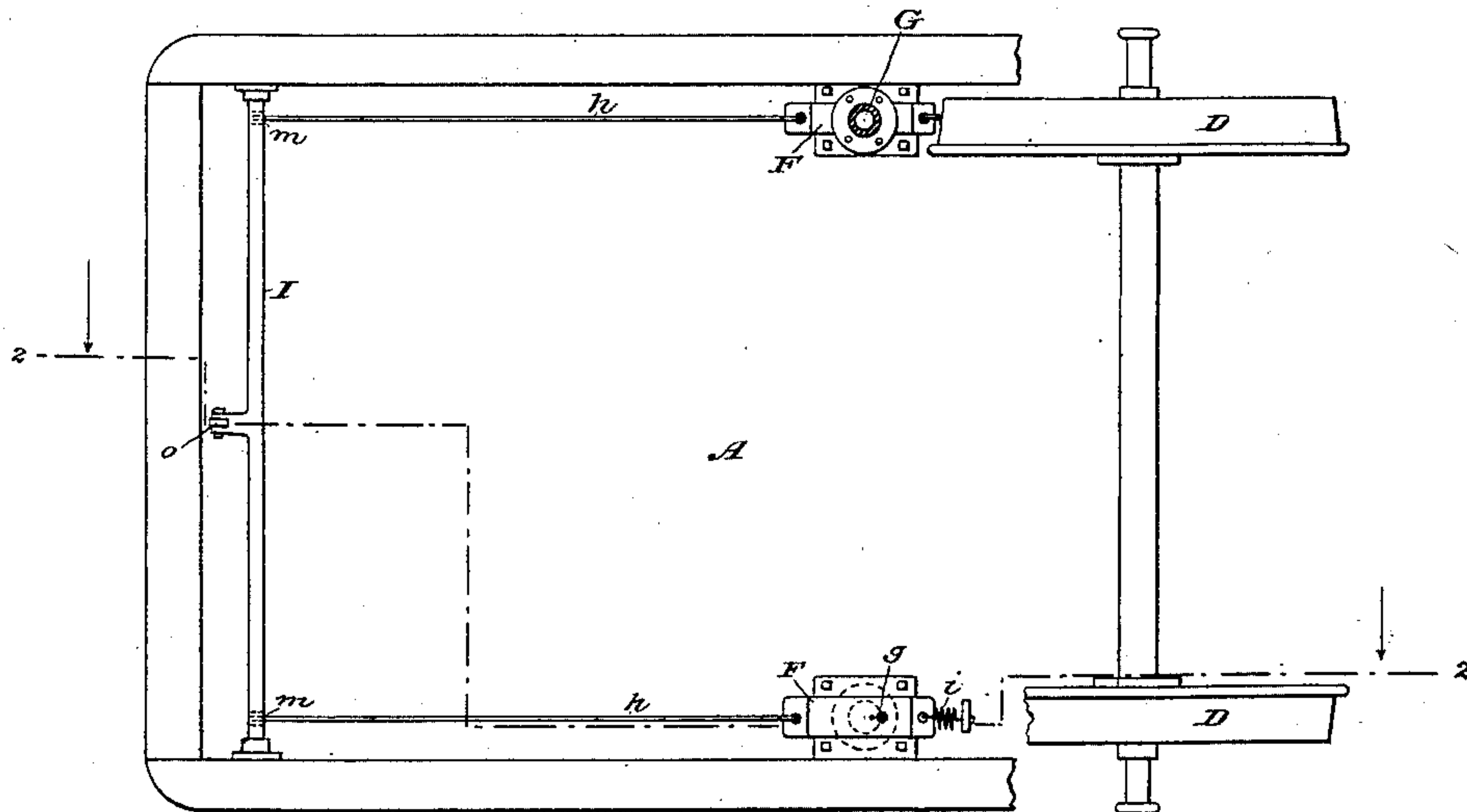
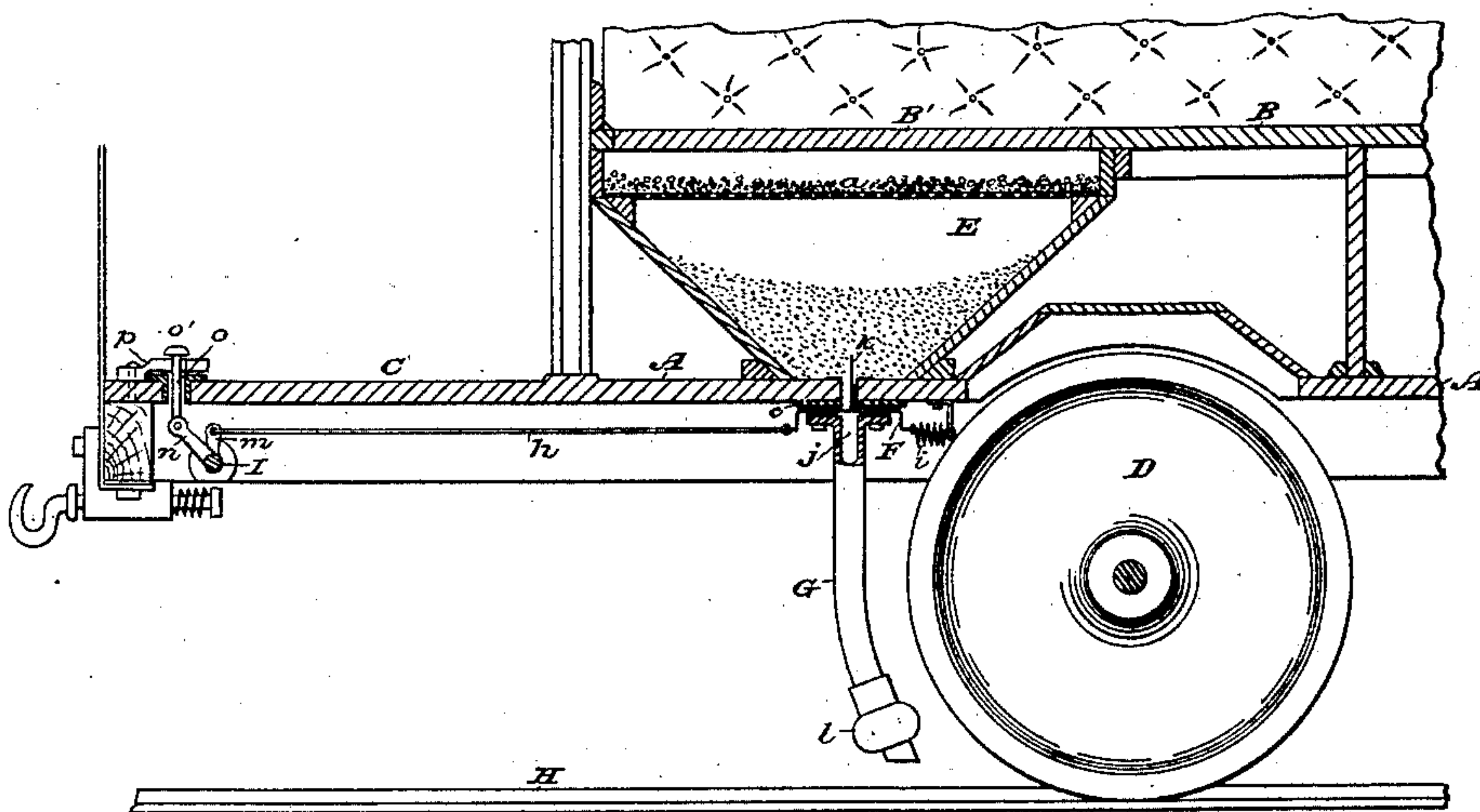


Fig. 2.



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Fig. 3.

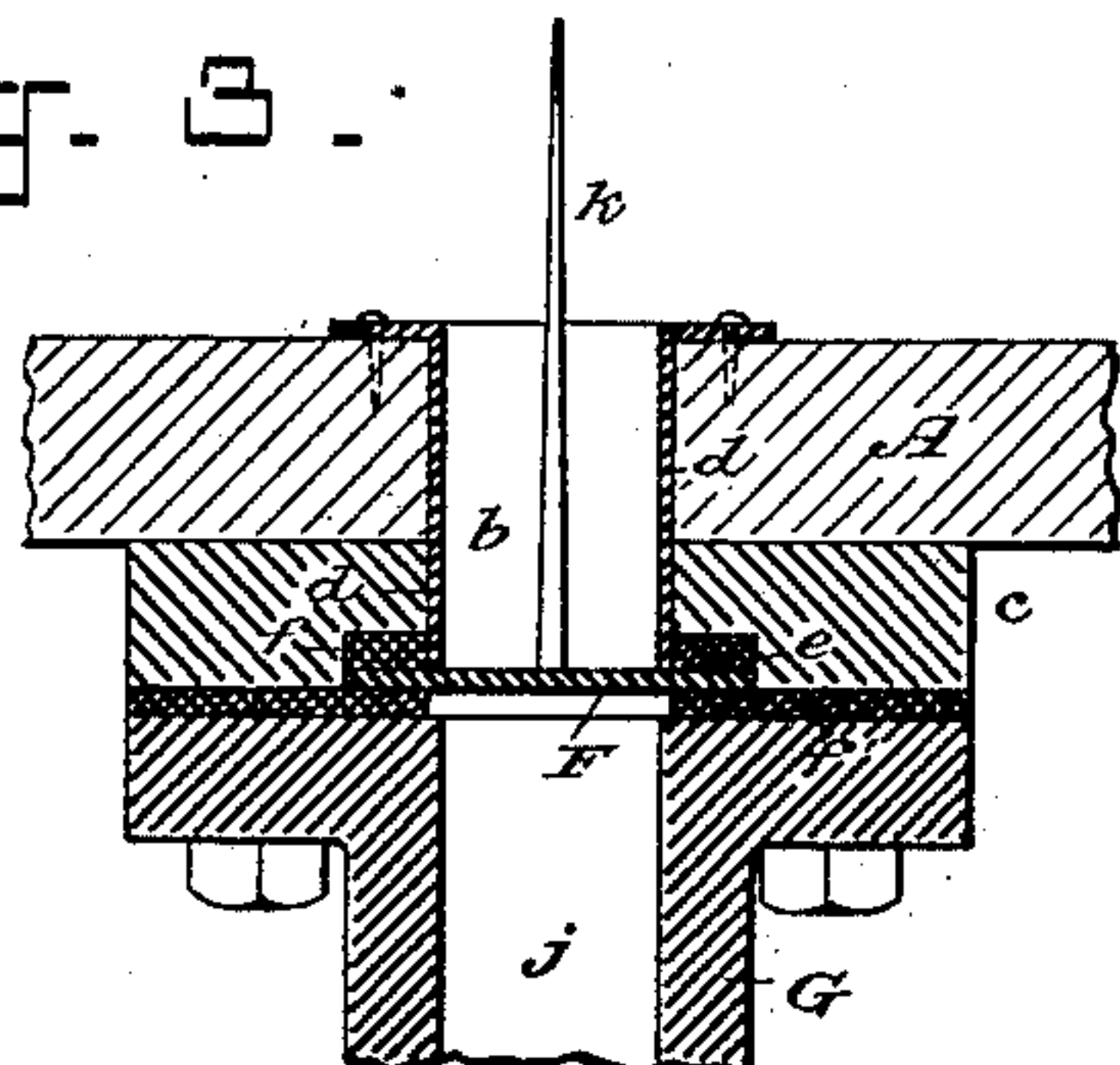


Fig. 4.

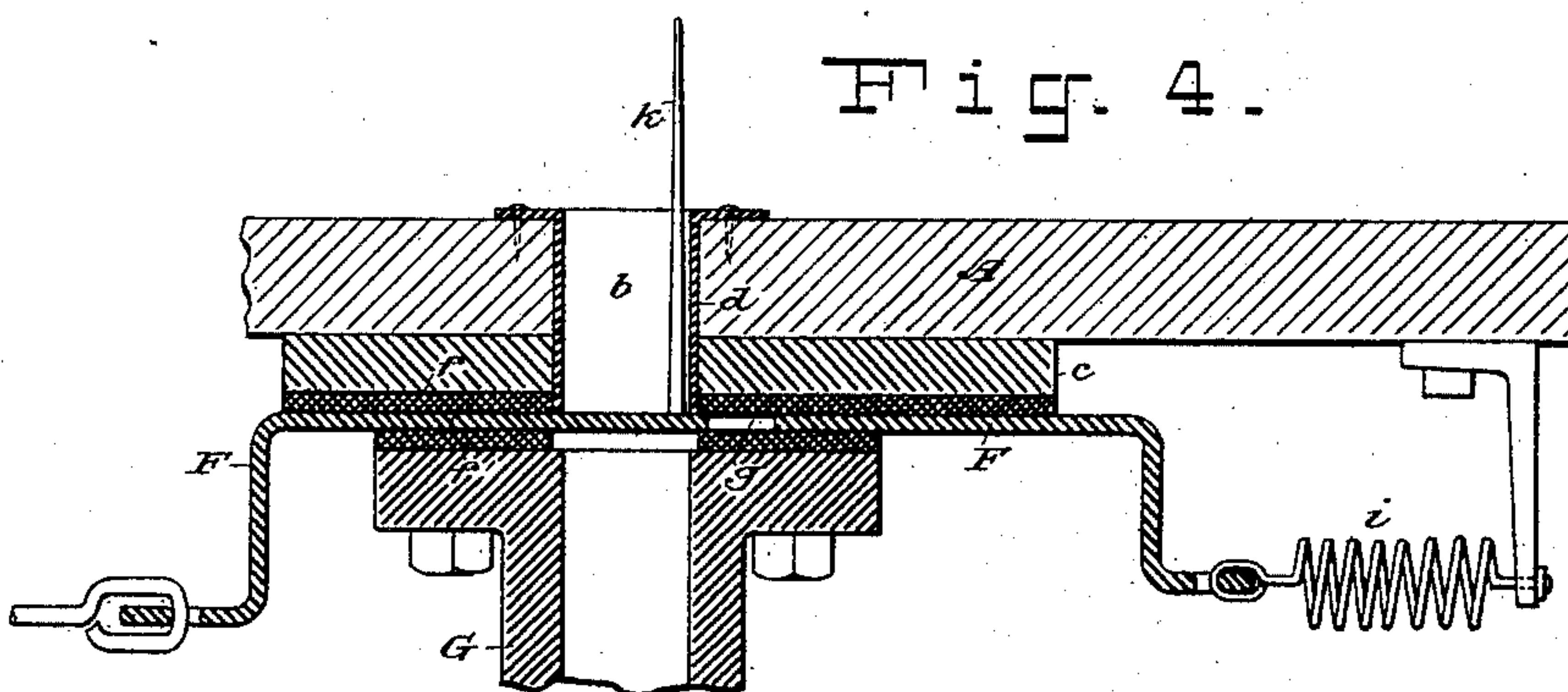


Fig. 5.

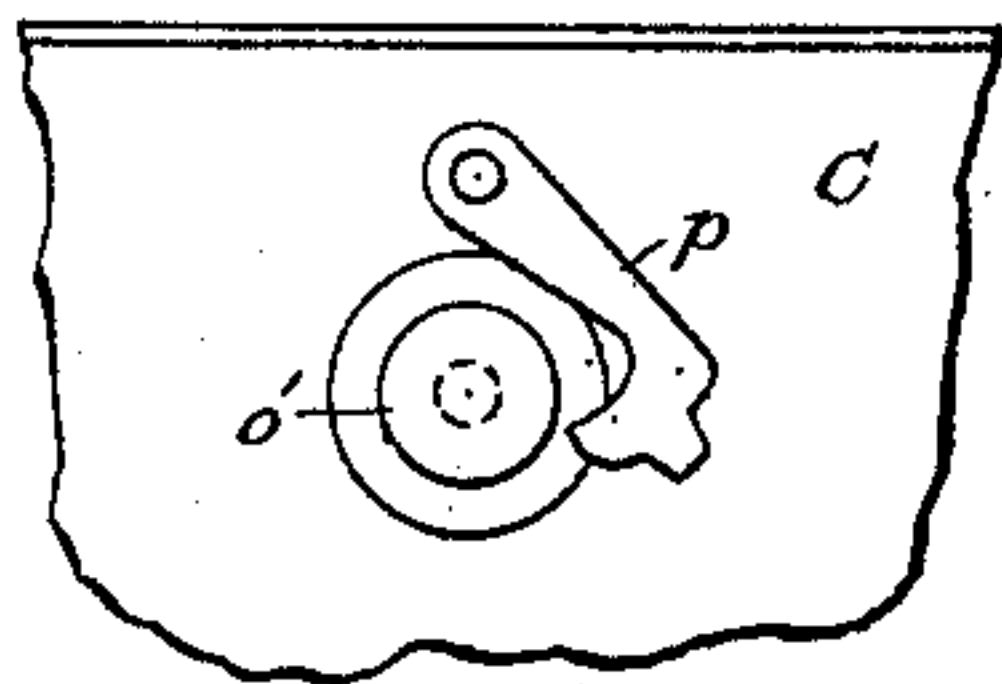
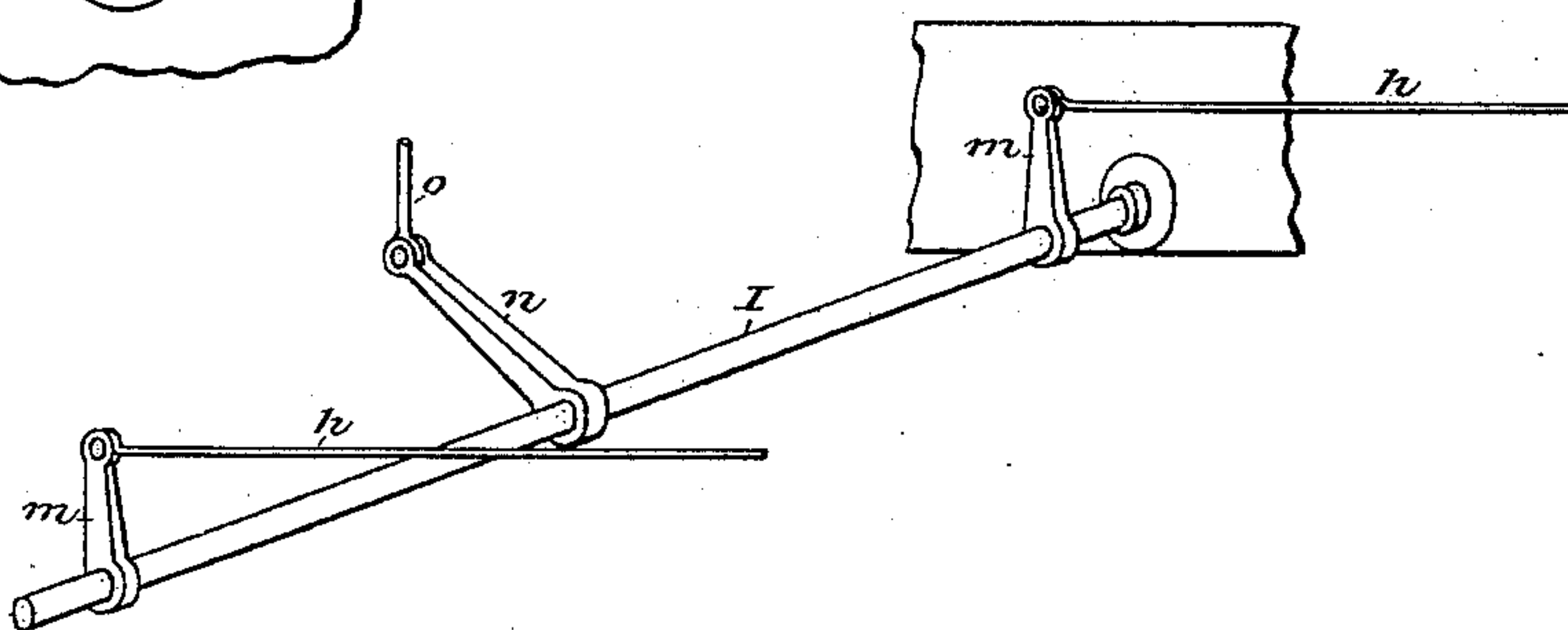


Fig. 6.



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JAMES W. LIVINGSTON, OF NEW YORK, N. Y.

SANDING APPARATUS FOR STREET-CARS.

SPECIFICATION forming part of Letters Patent No. 360,600, dated April 5, 1887.

Application filed July 20, 1886. Serial No. 208,530. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. LIVINGSTON, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain Improvements in Devices for Sanding the Rails of Street-Railways, of which the following is a specification.

My invention relates to that class of devices designed for applying sand to the rails in front of the wheels of a street-car in order to avoid collisions by preventing the sliding of the wheels along the rails after the brakes are set. In such devices certain difficulties are met with. For example, the sand is apt to cut the valve when the latter is shifted, and to leak or sift out when the valve is closed, owing to the vibration and jolting of the car. The sand is apt to choke up the outlet by packing. Gravel and sticks mixed with the sand are apt to clog up the outlet or interfere with the operation of the valve, and the device whereby the driver actuates the valve is apt to be inadvertently interfered with by riders on the back platform and the sand wasted at the rear end of the car.

The object of my invention is to correct these and other defects, and in other respects to improve the construction of such devices.

My invention will be fully described hereinafter, and its novel features carefully defined in the claims.

In the drawings which serve to illustrate my invention, Figure 1 is a bottom view of one end of a street-car provided with my improvements, enough of the parts of the car-body being shown to serve for illustrating the application of my invention thereto. Fig. 2 is a vertical section taken substantially in the plane of line 2 2 in Fig. 1. Fig. 3 is an enlarged vertical section through the sand-valve and adjacent parts, the plane of the section being taken transversely of the valve. Fig. 4 is a similar view to Fig. 3, but with the plane of the section taken longitudinally of the valve. Fig. 5 is a fragmentary plan view of the car-platform on a scale double that of Figs. 1 and 2, and illustrating the means for rendering the sanding device at the rear end of the car inert or inoperative for the time being. Fig. 6 is a perspective view of the rock-shaft, which will be hereinafter described.

Let A represent the bottom of a street-car, B the seat, C one of the end platforms, and D one pair of the wheels.

I have shown herein only one end of the car; but it must be understood that cars designed to run with either end ahead will be provided at both ends with sanding devices constructed according to my invention. As these devices will be constructed alike, it will only be necessary to describe one of them.

E represents a sand hopper or receptacle arranged under the car-seat, a removable part, B', of the seat forming its cover. Within the hopper E, and a little distance below the cover B', is arranged a screen, *a*, preferably of wire-gauze of any desired degree of fineness of mesh. In filling the hopper the sand is thrown in onto this screen, which allows the sand to pass through, but stops the gravel or coarser particles, which would be apt to clog up the sand-outlet at the bottom of the hopper. The screen also serves to break up lumps and loosen up the sand, so that it may pass out properly. I consider this screen a very important adjunct. It is fixed in place and prevents the careless attendant from filling the hopper with unscreened sand, which would certainly clog up the valve and prevent it from operating at the critical moment. It is only necessary for the attendant to shovel a quantity of unscreened sand upon the screen, and the jolting of the car will effect the screening. The sand outlet and valve will be best understood by reference to Figs. 3 and 4.

In the floor of the car, which forms the bottom of the hopper, is the sand-outlet *b*, which may be a hole about one inch in diameter, and secured to the bottom of the car is a metal plate, *c*, which has a hole in it that registers with outlet *b*. Fitted in the outlet *b*, and extending down through plate *c*, is a thin sheet-metal tube, *d*, which may be flanged at its upper end for attachment to the bottom of the hopper, as shown.

In the lower face of plate *c*, and extending lengthwise of the same, or lengthwise of the car when the plate is fixed to the bottom thereof, is a shallow groove or recess, *e*, Fig. 3, in which is placed and secured a piece of thick leather—as harness-leather, for example. Under this leather and resting against it is the

sand-valve F, which also rests and plays in the recess *e*. This valve F is simply a flat plate of any desired thickness, which has an aperture, *g*, in it of considerably less diameter than the sand-outlet *b*. When the valve is closed, this aperture stands out of coincidence with the sand-outlet, as seen in Fig. 4. To one end of the valve is coupled an operating-rod, *h*, and to the other end a retracting or valve-closing spring, *i*.

G is the sand-delivery tube or pipe, which is flanged at its upper end and secured to the plate *c*. The passage *j* in tube G coincides with the sand-outlet *b*, and between the flanged face of the tube and the valve F and plate *c* is interposed another piece of leather, *f'*. Thus it will be seen that the valve F plays in shifting between the two sheets or pieces of leather *f f'*, both of which have apertures coinciding with the sand-outlet *b*. The tube *d* extends down through leather *f*, and rests on the valve F, by preference.

On the valve F is an upright rod, wire, or spike, *k*, which projects up through the tube *d* into the sand-hopper, and serves to agitate or loosen up the sand at every movement of the valve, and thus prevent the sand from packing or clogging the outlet.

By being embraced between the two pieces of leather *f* and *f'*, I find the valve is protected against cutting, and all leakage is prevented. The tube *d* also serves to lead the sand directly to the valve, and prevents it from working out laterally.

The delivery-tube G depends in front of the car-wheel and stands directly over the track-rail H, as seen in Fig. 2. This tube bears, by preference, a ball or cushion, *l*, of rubber or other similar soft material, and serves as a means for preventing any one who may fall across the track from being run over. The cushion *l* serves to prevent the person struck from being injured by the blow from the tube or "track-clearer."

The car is provided with four valve devices, such as I have described—one for each wheel—and the two at one end of the car are operated simultaneously by the driver of the car.

I will now describe the operating mechanism I prefer to employ.

It is a rock-shaft mounted in bearings under the car-platform C, and extending crosswise of the car. This shaft is shown detached in Fig. 6. It is provided with two short arms, *m m*, which are coupled to the rods *h h*, respectively, which extend back to the valves F F. At the middle, or thereabout, of the shaft I is another arm, *n*, which stands at an angle with the arms *m*, and which is coupled to the lower end of a push-pin, *o*, which projects down through a hole in the platform, and has a head, *o'*, on its upper end. Normally the head of the push-pin *o* stands a little way—usually about one inch—above the platform C, and when the driver presses it down with his foot he rocks shaft I and draws forward both valves F F far enough to open a way for the sand to escape.

When he removes his foot, the springs *i i* instantly retract the valves, and thus close the sand-outlets.

When the car is moving in either direction, it is obvious the apparatus at the rear end of the car will for the time be idle. To prevent the passengers or riders on the rear platform from pressing down the push-pin *o* by treading upon it, I provide a dog or detent, *p*, (seen best in Fig. 5,) pivoted to the platform, and its head or free end arranged to take under the head *o'* of the push-pin. This dog prevents the push-pin from being depressed; but the driver may push it to one side with his foot or move it out of engagement with his hand, so as to permit the pin to play.

I do not claim this dog or detent *p*, as herein shown, as I am not the first inventor thereof. Any device that will prevent the push-pin from being depressed may be employed, so far as the operation of my device is concerned.

In Fig. 1 the valve device at the upper side shows the tube G in place, but its lower portion broken away. The valve device at the lower side shows the tube G and the leather *f'* wholly removed, so as to expose the valve.

I employ the pendent tube *d* and the spike or pin *k* on the valve to keep the sand loosened up in said tube; but I do not claim this particular device, as I am not the first inventor thereof; nor do I limit myself to its use as herein shown.

Felt or other similar material may be substituted for the leathers *f* and *f'*; but leather is best.

Having thus described my invention, I claim—

1. In a sanding apparatus or device for street-cars, the sand-hopper E, provided with a screen, *a*, substantially as and for the purposes set forth.

2. The combination, with the sand-hopper provided with an outlet, *b*, for the sand, the plate *c*, provided with an aperture registering with the outlet *b*, and provided with a recess to receive the valve, the said valve, the delivery-tube, and the leathers *f* and *f'*, embracing said valve, all arranged to operate substantially as set forth.

3. A sand-valve comprising a plate-valve proper, F, provided with an aperture for the passage of the sand, arranged between two pieces, *f f'*, of leather, and clamped by metal plates at the backs of the leathers, said plates and leathers also having registered apertures for the sand, substantially as set forth.

4. The sand-pipe G, provided with a cushion, *l*, of some soft or yielding material, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JAMES W. LIVINGSTON.

Witnesses:

HENRY CONNETT,
ROBERT JACKSON.