

LIFE GUARD OR OBSTRUCTION REMOVER FOR TRAM CARS AND THE LIKE.

APPLICATION FILED MAR. 2, 1908.

Patented Apr. 27, 1909.

6 SHEETS—SHEET 1.



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6 SHEETS—SHEET 2.

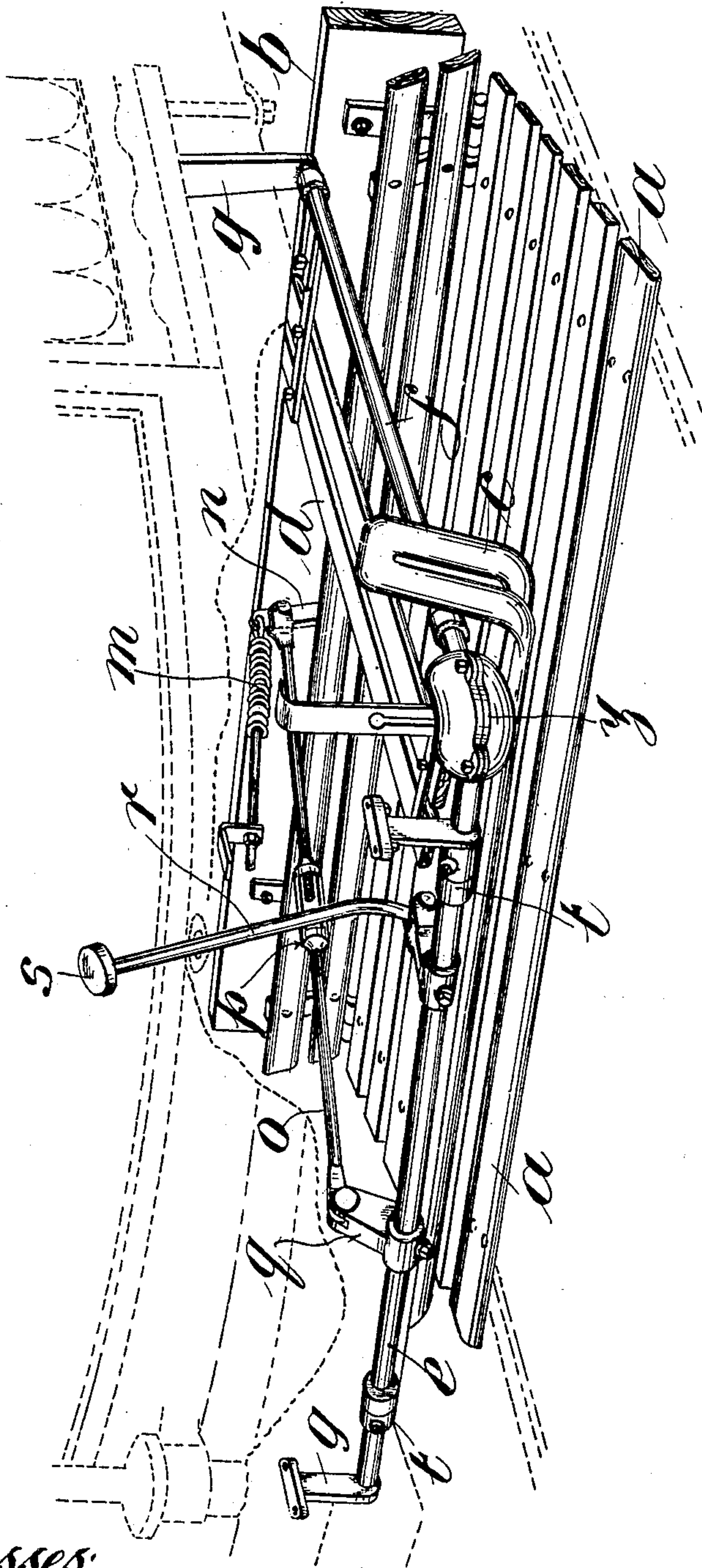


Fig. 2.

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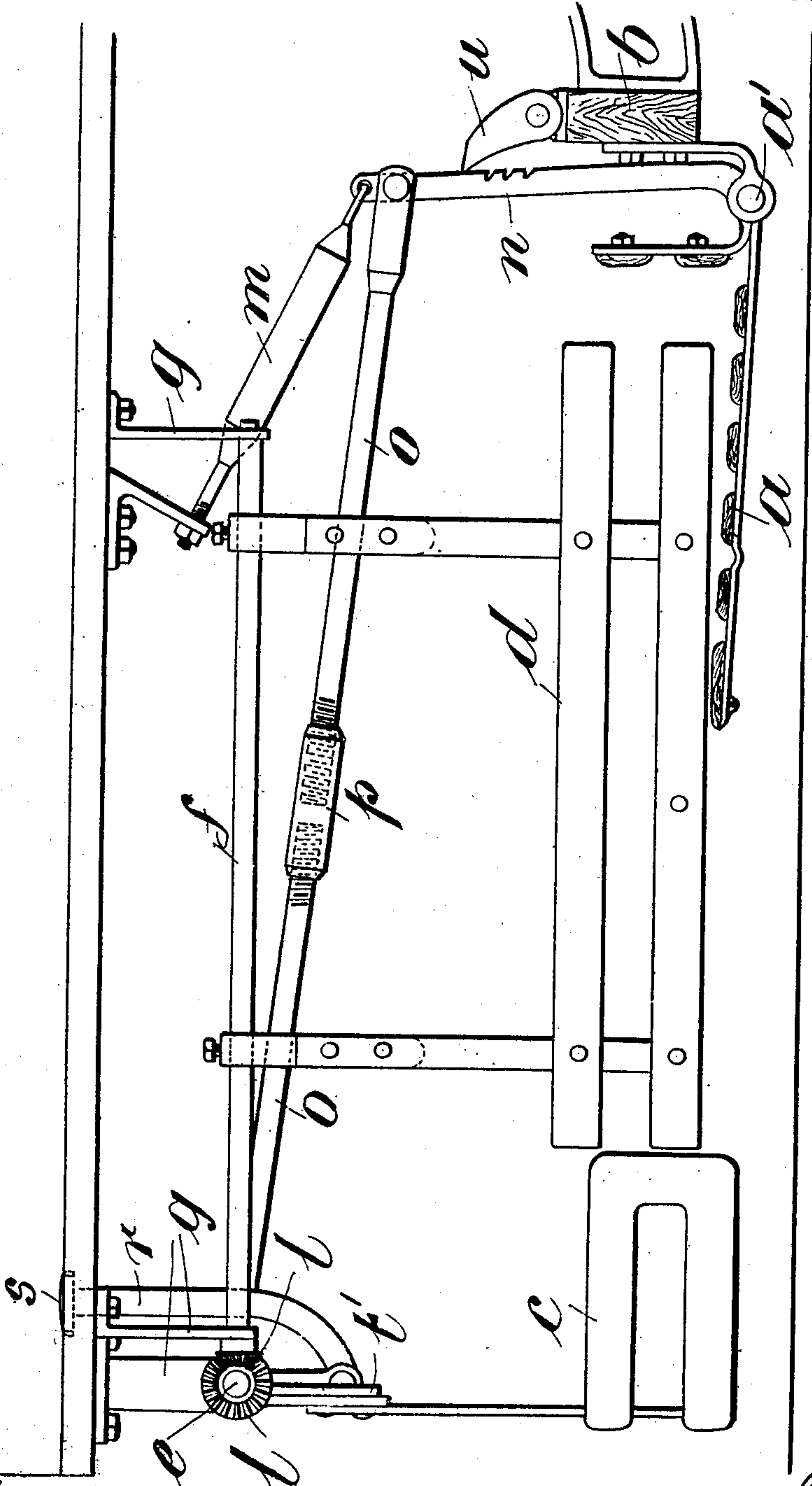


Fig. 3.

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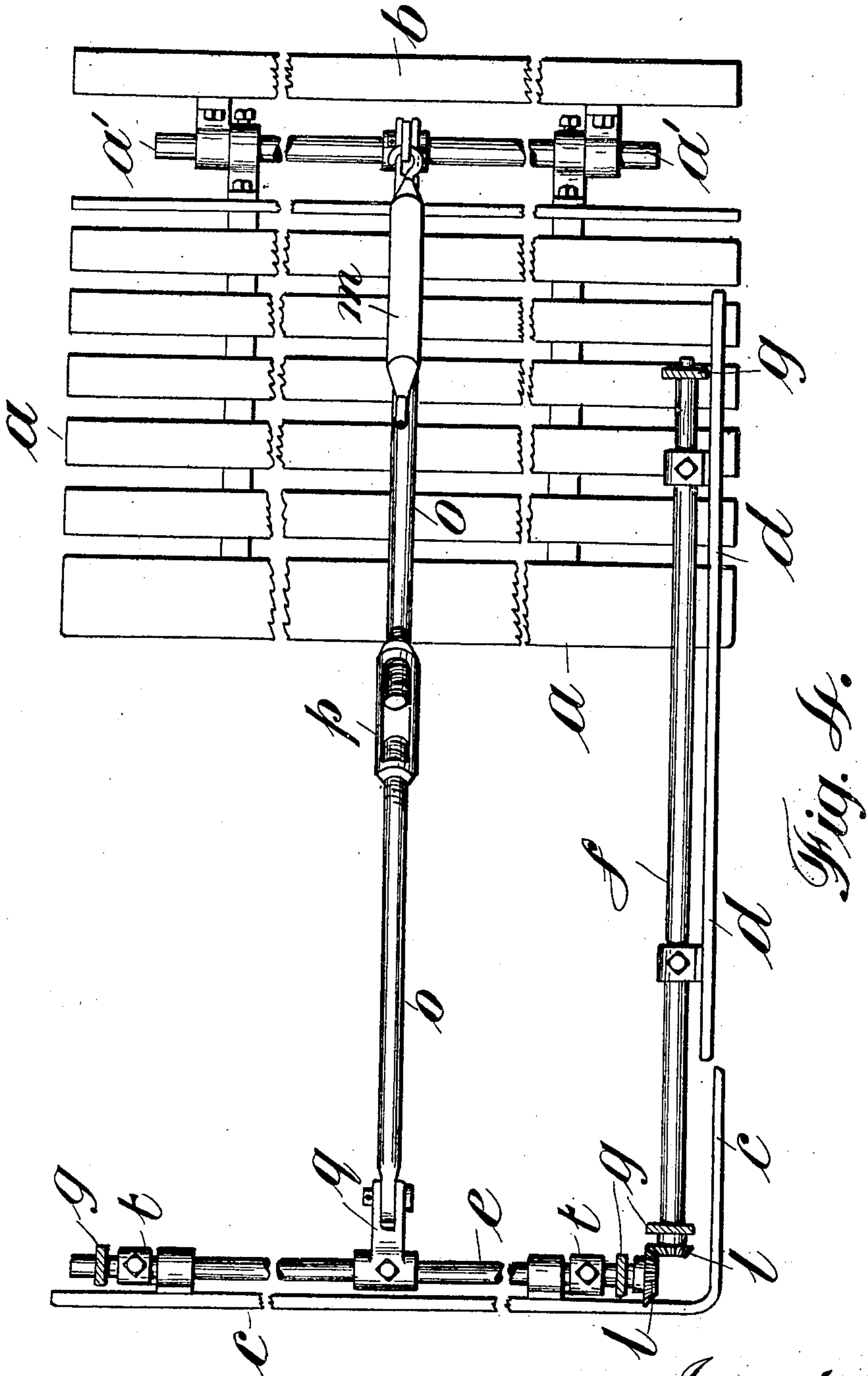


Fig. 4.

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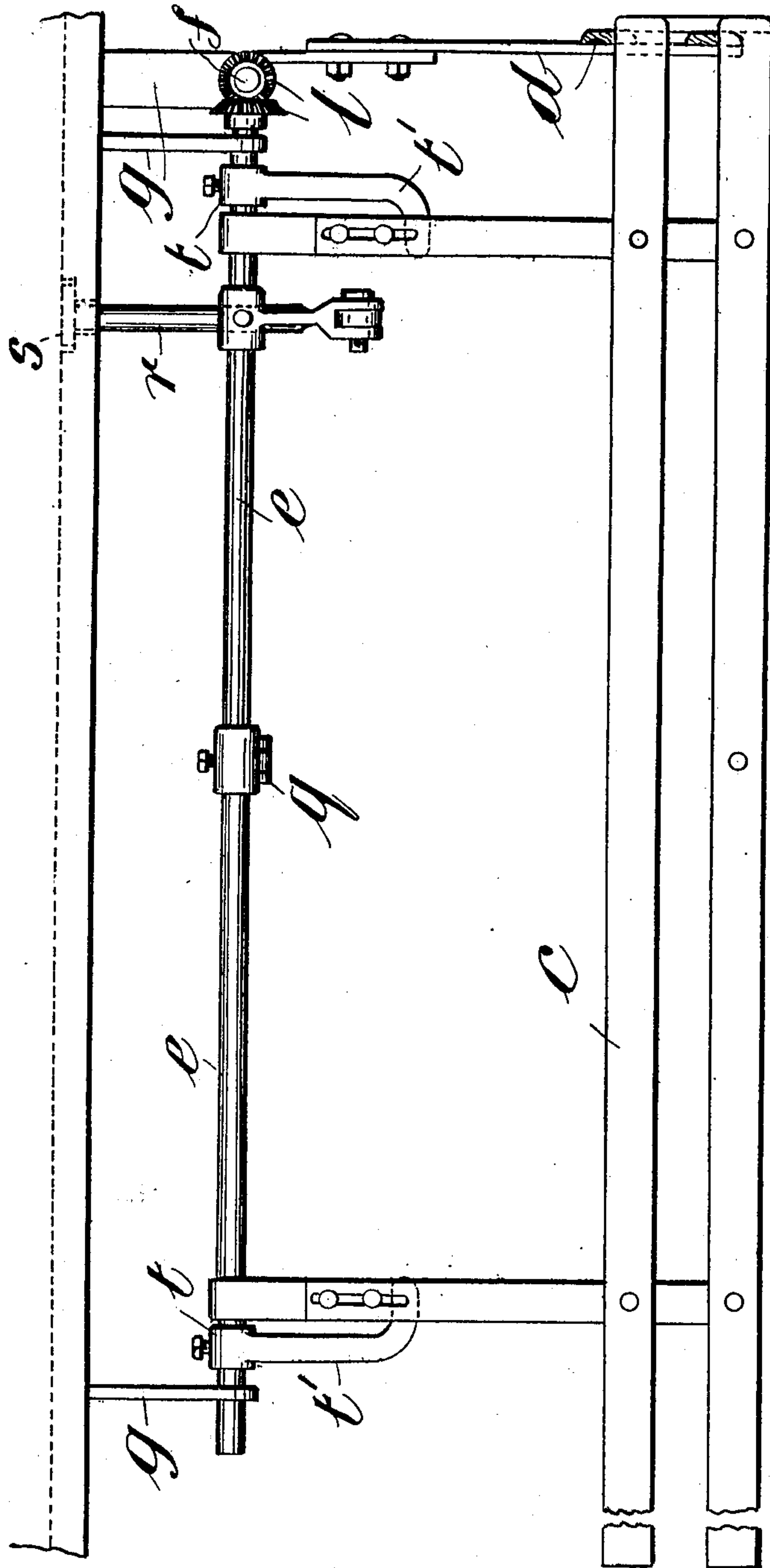


Fig. 5.

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6 SHEETS—SHEET 6.

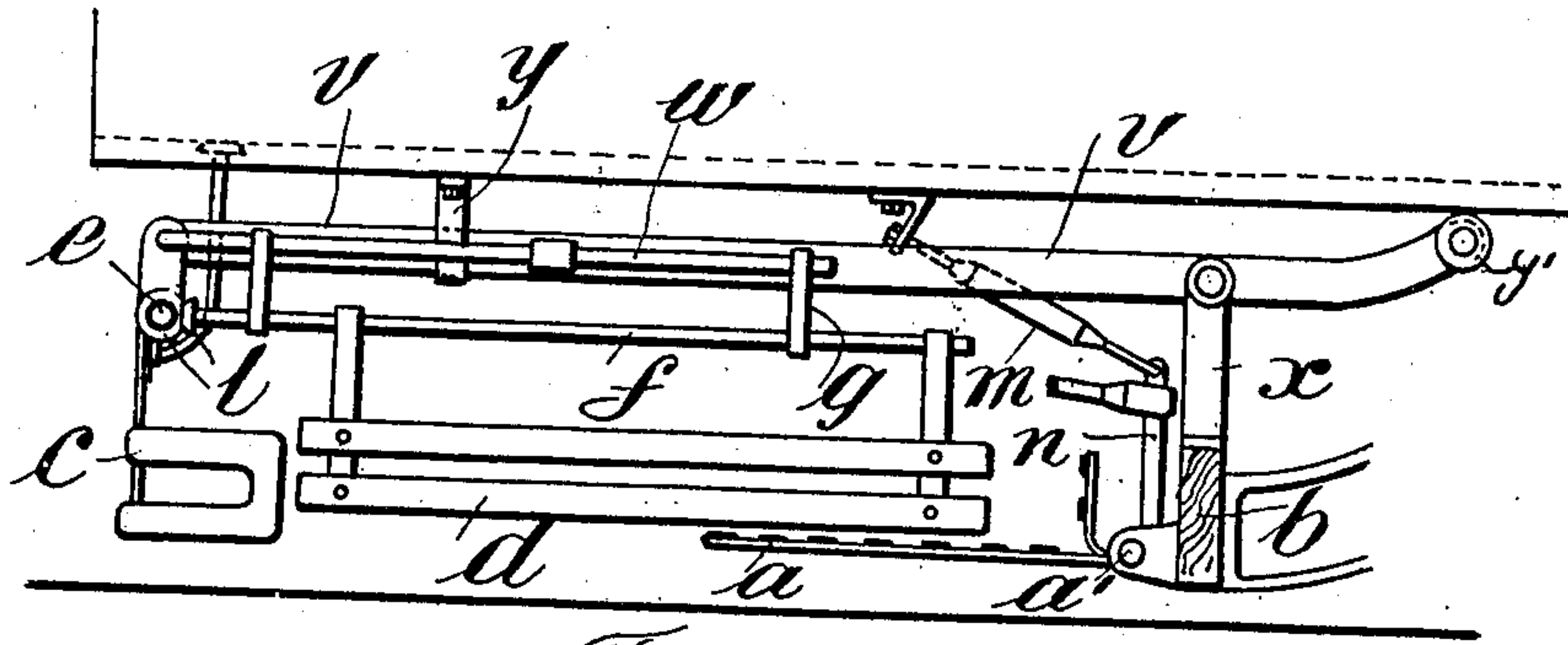


Fig. 9.

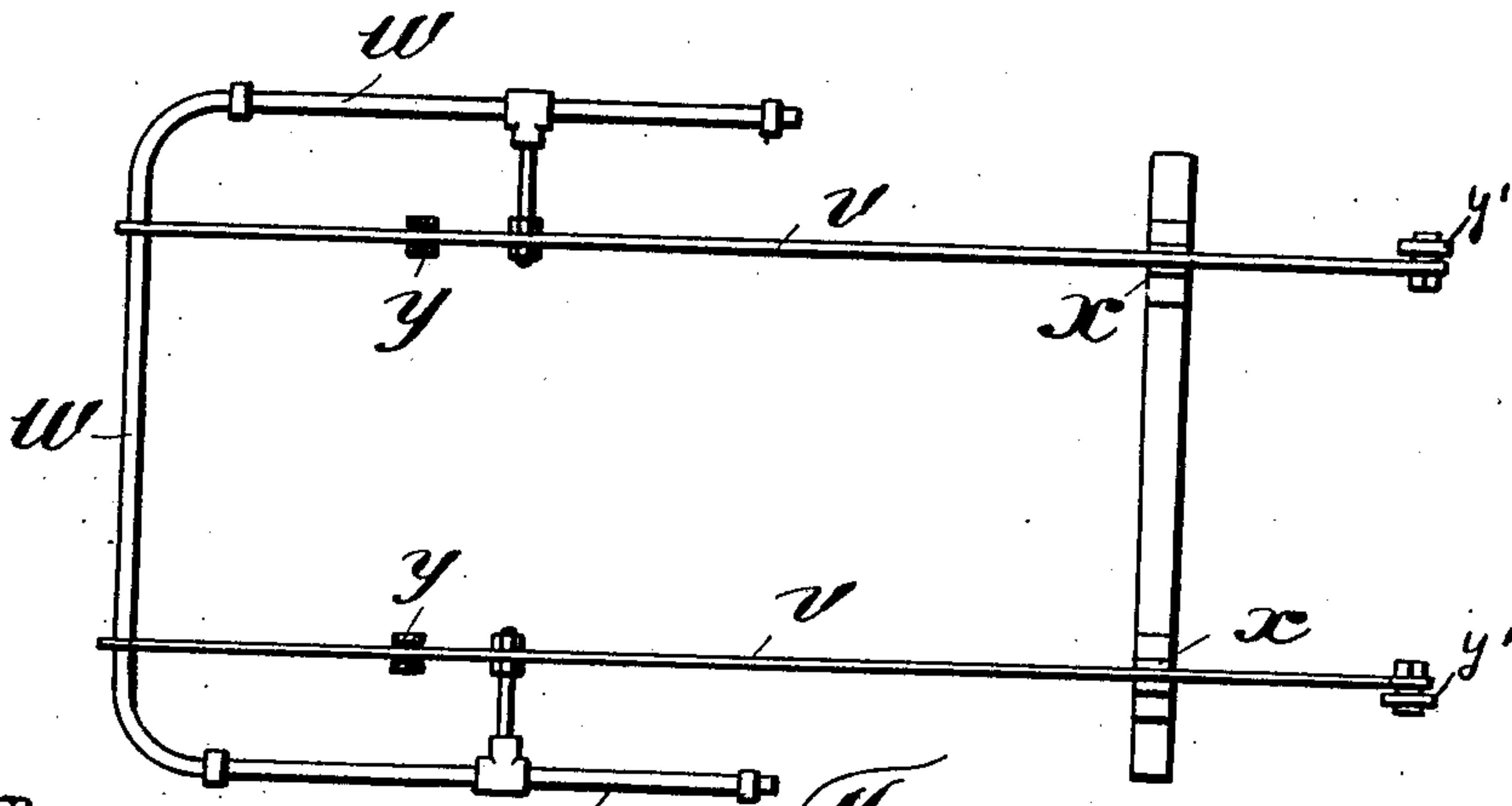


Fig. 10.

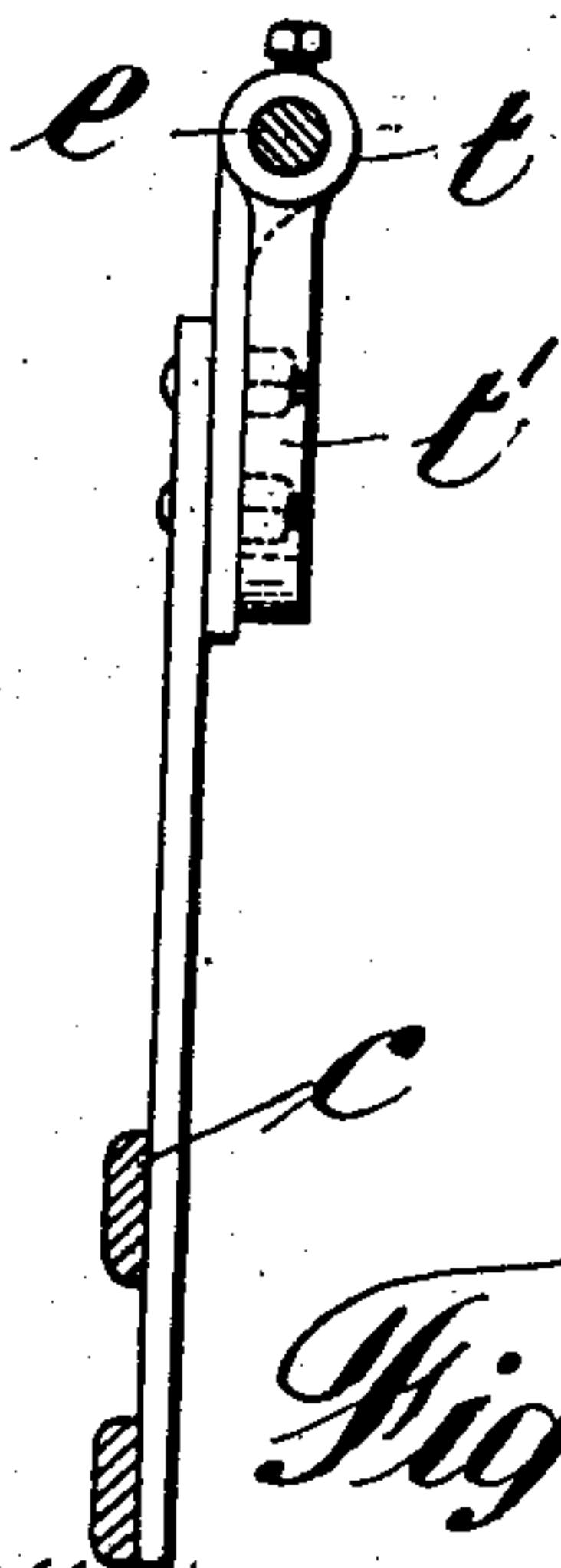


Fig. 5a.

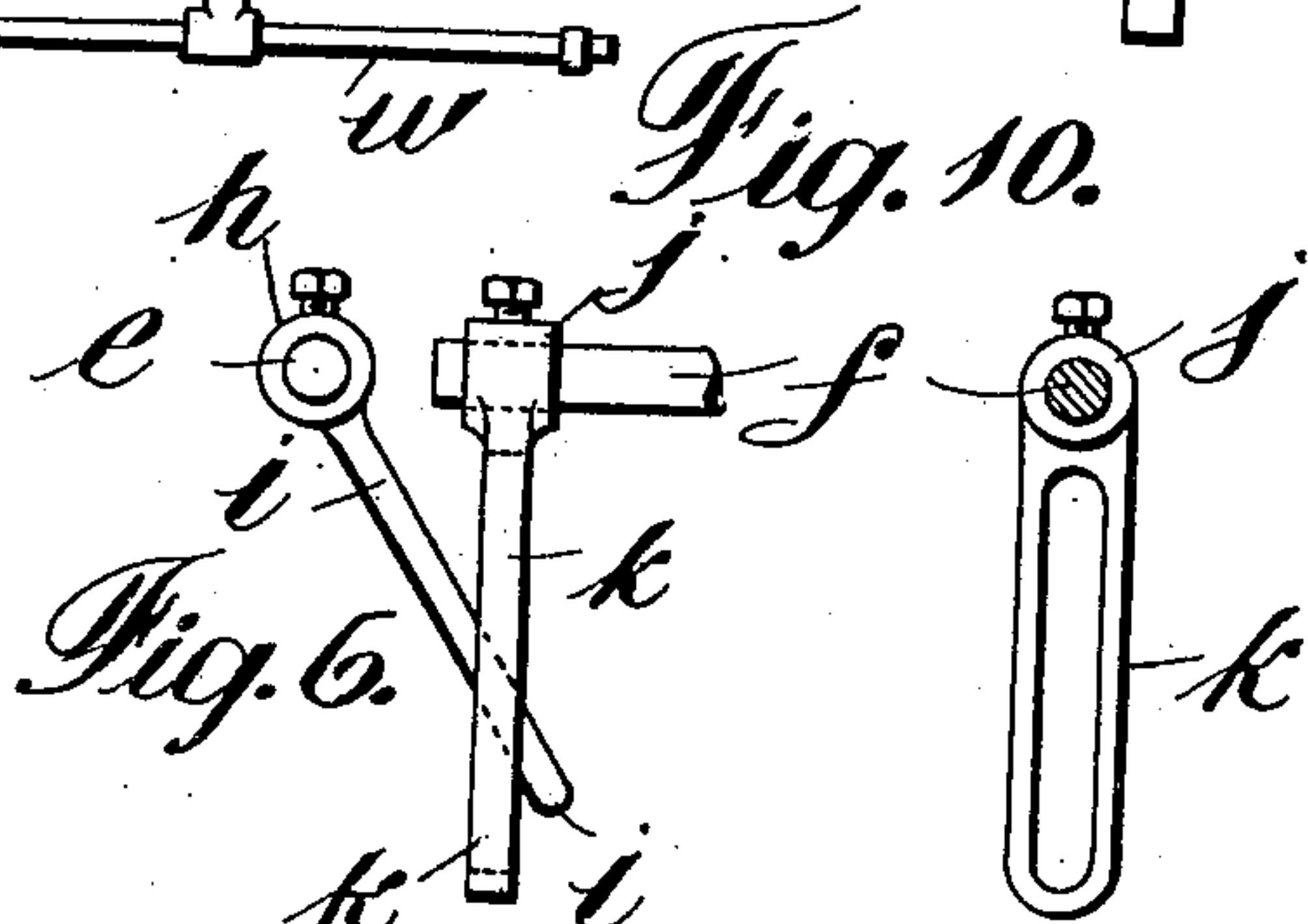


Fig. 6.

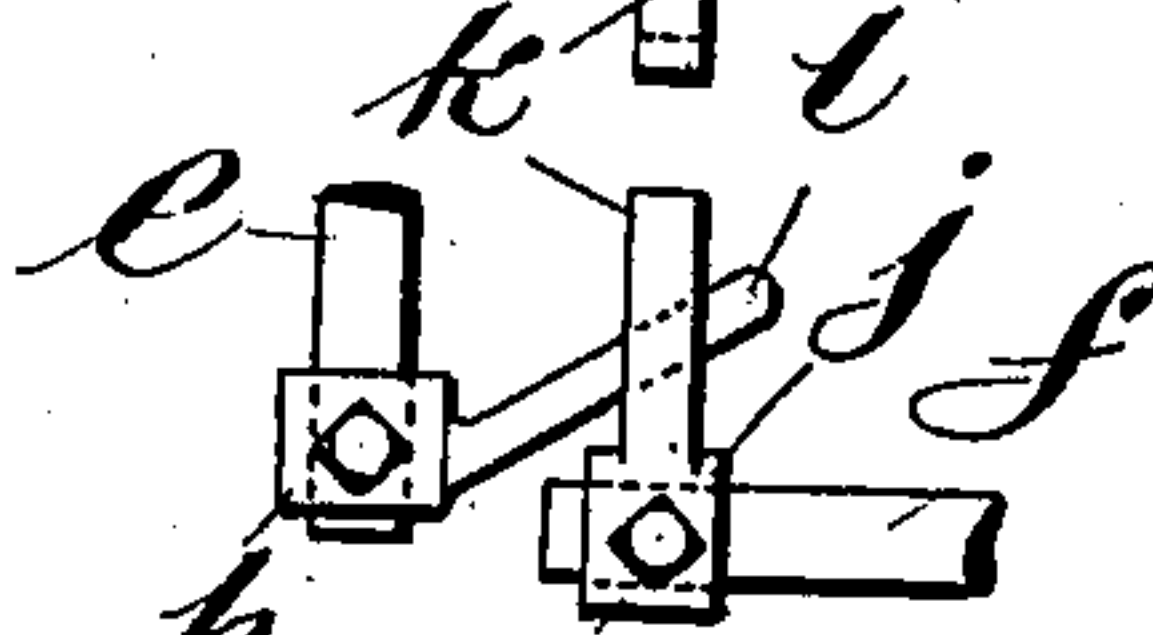


Fig. 7.

Fig. 8.

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UNITED STATES PATENT OFFICE.

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LIFE-GUARD OR OBSTRUCTION-REMOVER FOR TRAM-CARS AND THE LIKE.

No. 919,688.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed March 2, 1908. Serial No. 418,906.

To all whom it may concern:

Be it known that I, JOSEPH BOWRING, a subject of the King of Great Britain and Ireland, and resident of Manchester, England, have invented certain new and useful Improvements in or Relating to Life-Guards or Obstruction-Removers for Tram-Cars and the Like, of which the following is a specification.

This invention relates to lifeguards or obstruction removers as commonly used on tramcars for removing any person or object lying in the track of the car, and it refers to obstruction removers of the type in which a vertically hanging "gate" or fence and a hinged tray are used, the gate when swung rearwardly causing the lowering of the front edge of the tray on to the roadway.

The primary object of the invention is to combine with the said gate or fence, which is situated at the end of the car, a further gate or fence, which is arranged at the side of the car, and to provide means whereby, on either of the gates being swung inward below the car, the other gate is also swung inward, thereby insuring that the front edge of the tray shall be lowered whether the end gate or the side gate strikes, or is struck by the obstruction.

A further object is to cause the side gate to swing inward slightly in advance of the end gate and to an elevation where it will be completely out of the way of any obstruction met by the end gate.

Other objects of the invention are so to mount one or both of the gates that the gates will be held clear of the roadway whatever the depressions of the car body, and to provide the end gate axis with an adjustable form of stop which will allow of the gate swinging outward while insuring of the quick release of the tray when the gate is swung inward.

Upon the accompanying drawing, Figures 1 and 2 illustrate general perspective views of the improved obstruction remover, Fig. 1 showing the gates and tray in the positions they occupy prior to meeting an obstruction, while Fig. 2 shows the gates and tray in the positions they occupy after meeting an obstruction. Fig. 3 illustrates a geometric side elevation, and Fig. 4 a plan of the improved lifeguard, with the parts set ready for action. Fig. 5 illustrates a front elevation. Fig. 5^a is a sectional view show-

ing the manner of mounting the strap bars of the front gate to the shaft *e*. Figs. 6, 7 and 8 illustrate side, edge and plan views of a detail hereinafter described. Fig. 9 illustrates a side elevation, and Fig. 10 a plan of the guard when embodying the arrangement for raising the gates clear of the roadway when the car body is depressed.

Referring to Figs. 1, 2 and 3, *a* is the tray which is pivoted to the pilot board *b* in the usual manner. *c* is the end gate and *d* the side gate, the former being suspended from a cross shaft *e* and the latter being suspended from a shaft *f* and both shafts being axially supported by hangers *g* on the car body, or by other and suitable devices. At one end the two shafts lie in close proximity to each other, and upon such ends an arrangement of mechanism is provided whereby, when either of the shafts is rotated, the motion is transmitted to the other shaft and in such a manner that the side gate shaft rotates at a quicker rate than the end gate shaft. One arrangement consists of a boss *h* carrying a finger-projection or rod *i*, see Figs. 6 and 8, and mounted fast and adjustably upon the end gate shaft *e*. It also consists of a further boss *j* carrying or formed in one with a slotted arm *k* and mounted fast and adjustably upon the side gate shaft *f*. The angle of the rod *i* to its boss and its relationship to the slotted arm are such that in all positions of the gate it projects through the slot of the arm, and when the end gate rotates inwardly the side gate is rotated inwardly and in advance of the end gate. The positions of the rod and slotted arm may, if desired, be reversed. To reduce the friction between the rod and arm, the rod may be fitted with a loose sleeve or a series of short sleeves or runners. Another and more preferable arrangement consists of two unequal sized bevel wheels *l l*, the former fixed on the end of the shaft *e* and having more teeth than the latter which is fixed upon the shaft *f*. Instead of complete bevel wheels being used, segmental wheels may be used.

The end gate axis or shaft *e* and the tray axis *a'* are provided with the usual fittings and connections for holding the front edge of the tray elevated when the end gate is vertical and lowering it when the gate is moved inward, the connections being, by preference of the "toggle" joint kind, with a spring to maintain the joint and force down the tray

edge when the "toggle" is broken. The said parts comprise the lever arm *n* on the tray axis, the connecting rod *o* (made in two parts with turn buckle *p* to adjust the length of the rod), and the short lever arm *q* mounted fast on the shaft *e* and to the free end of which is linked the rod *o*.

r is the resetting rod with foot plate *s* at its upper end, and at its lower end, after passing through the car floor, pivotally connected to a further fixed arm on the shaft *e*. When the plate *s* is resting on the floor of the car it serves to hold the connecting pin of the arm *q* and rod *o* slightly below a straight line drawn between the shaft *e* and the upper end of the lever arm *n*, and thus produce the desired toggle by which the front edge of the tray is held raised.

The gates each consist of long adjustable strap bars and, by preference, two wood cross-battens, those of the end gate being bent at one end and extending back to a point near the ends of those of the side gate, see Fig. 4.

To allow the end gate *c* to swing outward without affecting the tray, the strap bars are loosely mounted upon the shaft and an adjustable arm *t* is rigidly fixed upon the shaft *e* alongside each strap bar, which, at its free end, is slightly curved and lies behind the strap bar, see Fig. 3. When the car is depressed the gate is free to swing forward, and should the gate touch the roadway when at the rear of the car, it is free to travel without being damaged or broken.

The strap bars of both gates may be fast upon their axes, but in order to allow the end gate to swing outward or rearwardly when at the rear of the car, the bars may be loose on the end gate axis, and only act on the gate through the abutment of the gate with a projection on the axis. That is to say, the gate axis may have an adjustable but fixed boss *t* carrying a projection or arm *t'*, designed to lie immediately behind the strap bar, so that, while allowing the gate to swing outward without affecting the toggle, it breaks such toggle as soon as the gate moves inward.

To help in holding the front edge of the tray down upon the roadway, the pilot board may carry a pivoted plate *u*, see Fig. 5, which, on the front edge of the tray being lowered on to the track, engages a shoulder or notch in the lever arm *n* and thus prevents the edge of the tray rising until withdrawn.

According to the further features of the invention, which are shown in Figs. 9 and 10, the end gate axis or shaft *e*, and also, if desired, the shaft *f* of the side gate, is carried by two long levers *v*, *v*, the gate shafts being suspended by their strap bars from a bent rod *w* and the rod being carried by the levers, see Fig. 10. These levers are each fulcrumed upon brackets *x* mounted on the pilot board

or other fixed part of the car under-frame, and the end of each lever, beyond the fulcrum, is turned upward and bears against the under-frame of the car body, see Fig. 9. Each lever is or may be guided by a forked guide *y* depending from the car body, and each may bear against the underface of the car through the medium of a roller *y'*. With the parts thus mounted and arranged, it will be seen that any depression of the car body will cause the levers to raise the gate axes, and thus prevent the lower edges of the gates touching the roadway, while should the car rise the levers will lower the gates and thus maintain the gates at a normal level. By varying the position of the fulcrums of the levers, the rise and fall of the gates may be varied.

Usually it will suffice if the end gate is adjustably supported, the side gate then being supported from the car body and the levers *v*, *v* directly engaging the end gate shaft. In such an arrangement the teeth of the bevel wheels *l*, *l* will be made deep in order that, with the rise and fall of the gate, they shall always be in mesh.

The strap bars may each be made in two parts, and one or both parts be slotted so as to allow of the lower edge of the gate being adjusted in height relatively to the roadway, and the connections of the bars may be such as to allow the lower part of the gate to rise up should it touch the roadway.

When desired there may be two side gates, one for each side of the car, and both working in conjunction with the end gate.

To protect the bevel wheels from dirt, etc., they may be incased in a divided cover *z*, see Figs. 1 and 2.

While the improved lifeguard-or obstruction remover is intended chiefly for tramcars, it may be applied to motor buses and other vehicles of a like kind. Also, while preferring to use the "toggle" joint arrangement for holding the front edge of the tray elevated and the breaking the "toggle" for lowering such edge, I may employ any other and suitable arrangement of mechanism.

What I claim is:—

1. In combination in lifeguards or obstruction removers for tramcars and the like, an end gate and a side gate, and means whereby the inward movement of one gate is transmitted to the other gate, and such other gate is caused to also move inward substantially as herein set forth.

2. In combination in lifeguards or obstruction removers for tramcars and the like, an end gate, a shaft and hangers for supporting the gate, a side gate and a shaft and hangers for supporting such side gate, in combination with a slotted lever arm on the shaft of one gate, and a rod on the shaft of the other gate such rod being set at an angle

and projecting through the slotted arm, substantially as and for the purposes herein described.

3. In combination in lifeguards or ob-
struction removers for tramcars and the like,
an end gate, a shaft and hangers for sup-
porting the gate, a side gate and a shaft and
hangers for supporting such side gate, means
for rocking the shaft of the end gate and
means for transmitting the movement of
said shaft to the shaft of the side gate, sub-
stantially as and for the purposes herein
described.

4. In combination in lifeguards or ob-
struction removers for tramcars and the like,
a gate and gate shaft, strap bars therefor
loosely mounted on the said gate shaft and
each bar formed in two parts, means for ad-
justably connecting the said parts and an
arm or arms adjustably fixed on the gate
axis, and lying immediately behind the
strap bars when the gate hangs vertically sub-
stantially as and for the purposes herein de-
scribed.

5. In combination in lifeguards or ob-

struction removers for tramcars and the like,
a swing gate, levers carrying such gate,
brackets secured to a fixed part of the under-
truck of the tramcar, and said levers ful-
crumed thereon while their free extremities
beyond the brackets bear against the under-
face of the car, substantially as and for the
purposes herein described.

6. In combination in lifeguards, or ob-
struction removers for tramcars and the like,
an end gate and a side gate, a bent rod,
means for supporting the gates from such
rod, and levers for carrying the said rod,
brackets on a fixed part of the car under-
truck on which the levers are fulcrumed, the
free end of the levers beyond the bracket
bearing against the under-face of the tramcar,
substantially as and for the purposes herein
described.

In witness whereof I have hereunto set
my hand in the presence of two witnesses.

JOSEPH BOWRING.

Witnesses:

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F. C. PENNINGTON.