

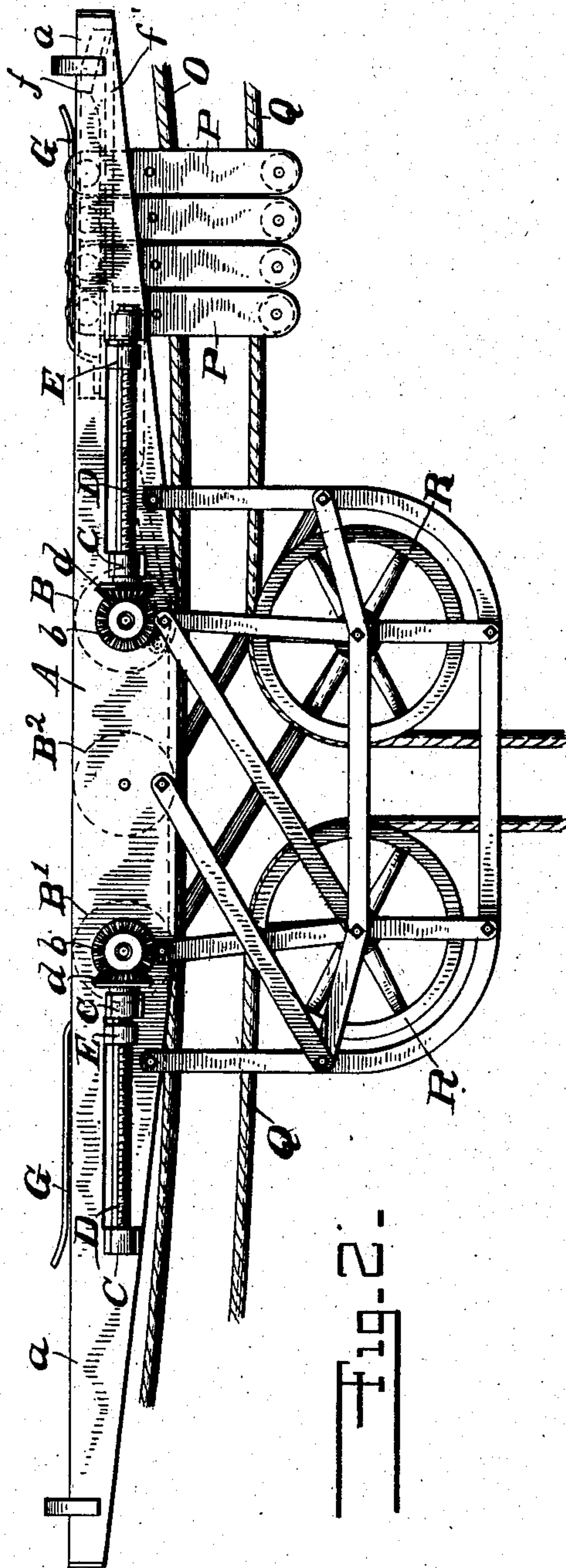
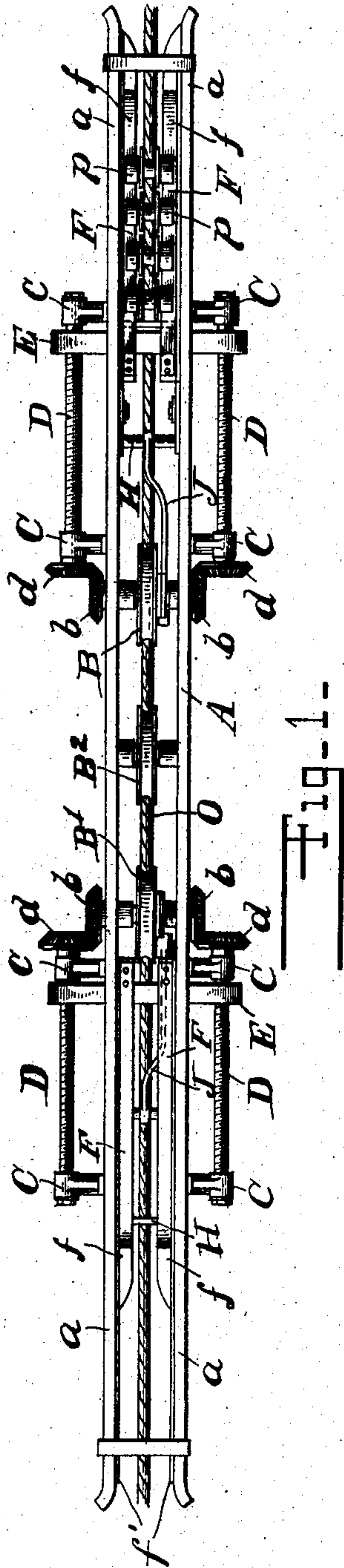
No. 741,633.

PATENTED OCT. 20, 1903.

J. G. CROWDES.
CABLEWAY CARRIAGE.
APPLICATION FILED NOV. 16, 1901.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses:
J. B. McGirr.
H. L. Reynolds

Inventor
Jackson Is. Crowdes
by *Lyford & Beece*
his attorneys.

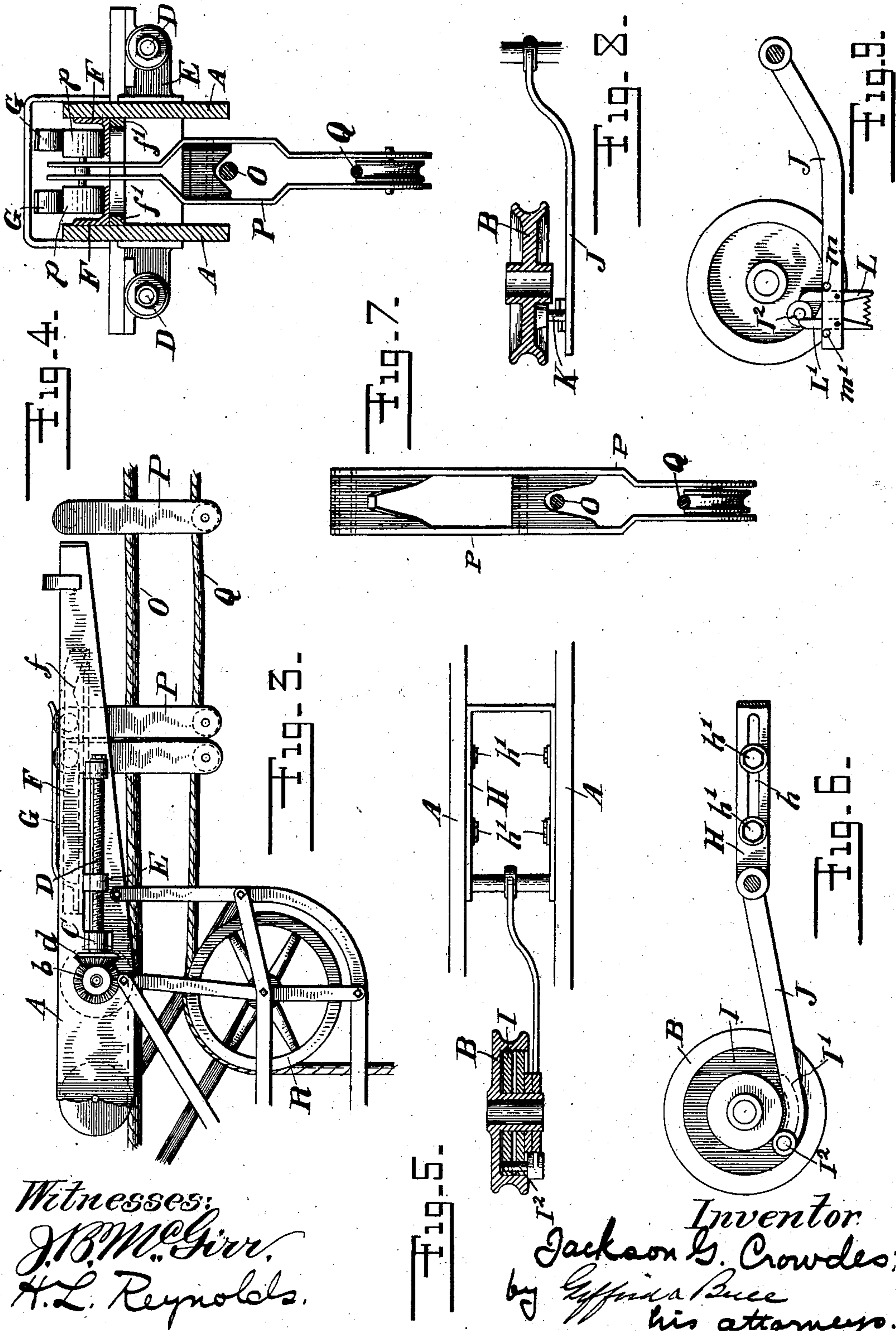
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 12-

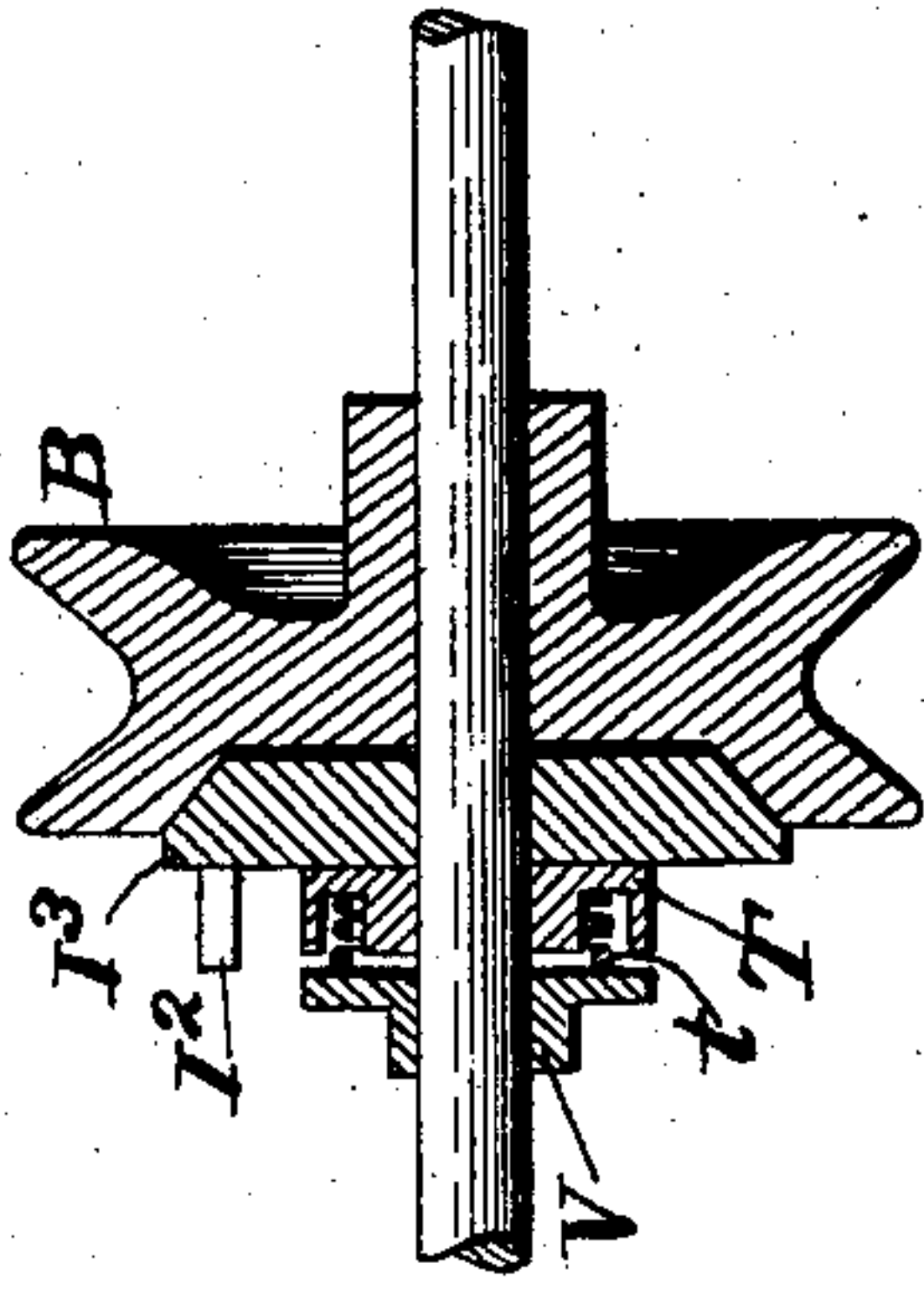


Fig. 13-

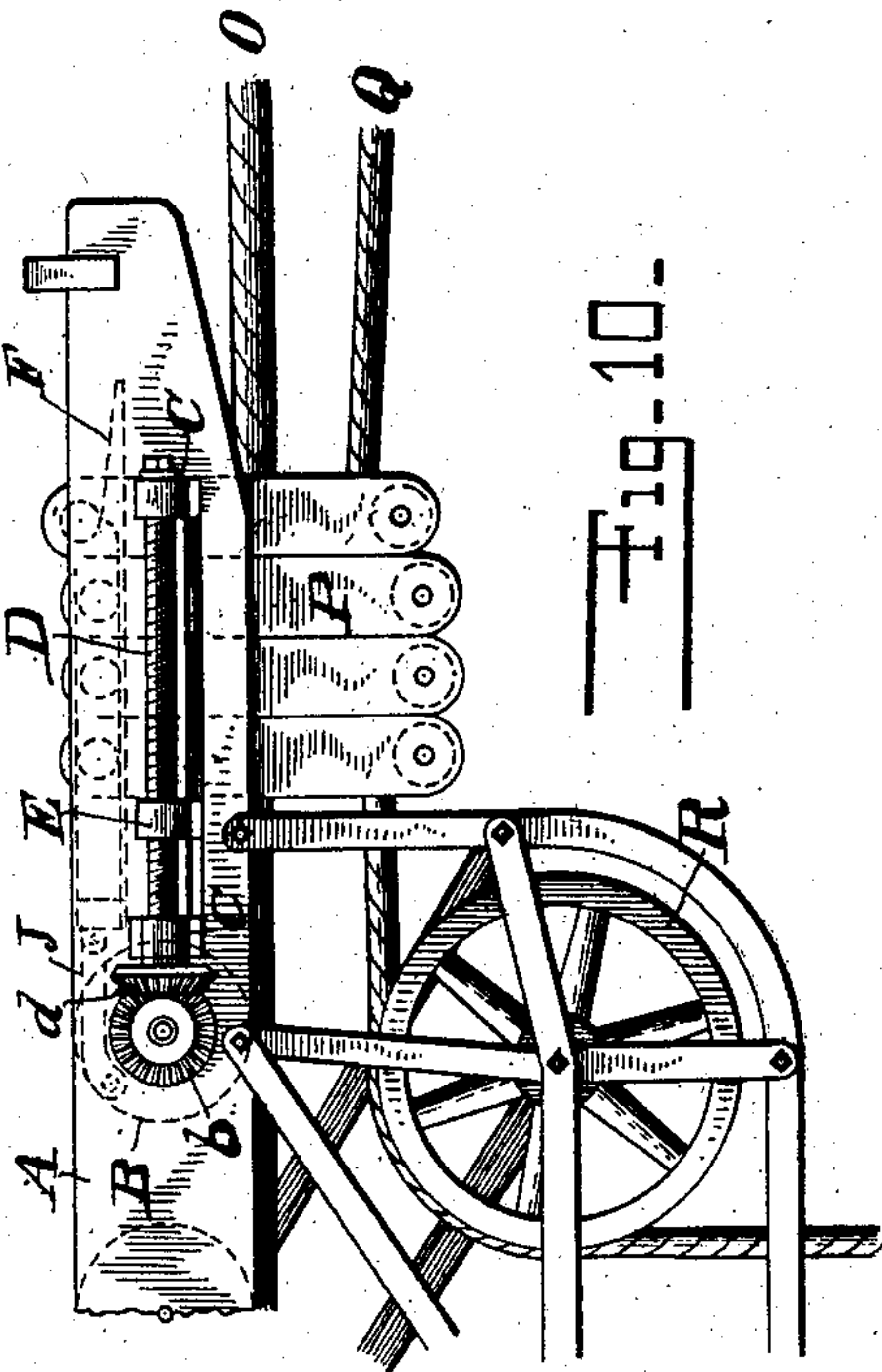
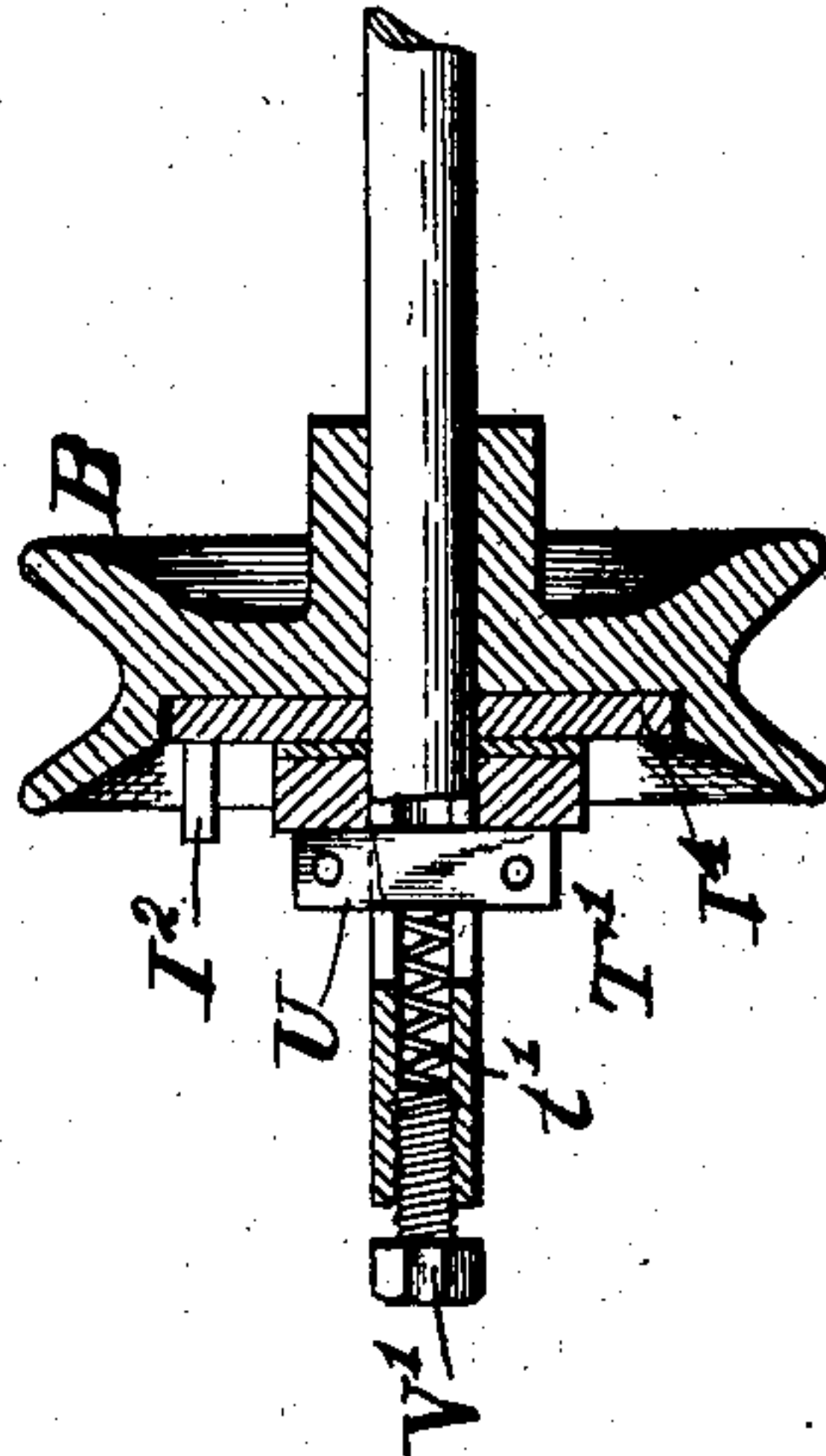


Fig. 10-

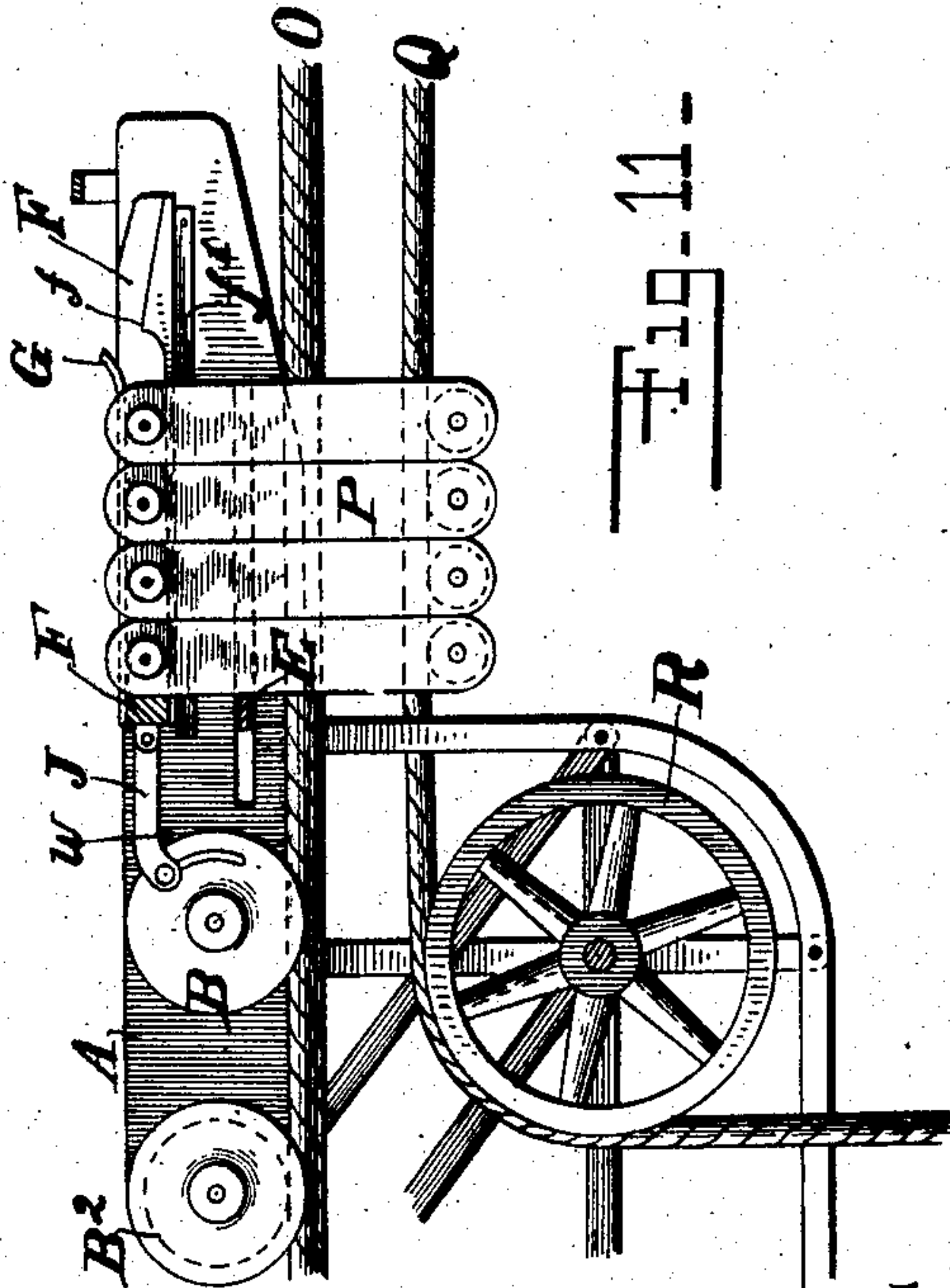


Fig. 11-

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UNITED STATES PATENT OFFICE.

JACKSON G. CROWDES, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO
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CABLEWAY-CARRIAGE.

SPECIFICATION forming part of Letters Patent No. 741,633, dated October 20, 1903.

Application filed November 16, 1901. Serial No. 82,536. (No model.)

To all whom it may concern:

Be it known that I, JACKSON G. CROWDES, a citizen of the United States, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Cableway-Carriage, of which the following is a full, clear, and exact description.

My invention relates to improvements in cableway-carriages, and particularly relates to means for picking up and discharging fall-rope carriers.

My invention comprises the novel features which will be hereinafter described, and particularly pointed out in the claims.

Figure 1 is a plan view of a carriage having my invention thereon. Fig. 2 is a side elevation of the same. Fig. 3 is a side elevation of one end of the carriage. Fig. 4 is a cross-sectional elevation of the carriage through the devices for holding the fall-rope carriers. Figs. 5 and 6 are respectively a sectional plan and elevation of one form of device increasing or decreasing the storage-room for the carriers by the reversal of the travel of the carriage. Fig. 7 is an end elevation of a carrier. Figs. 8 and 9 are respectively a sectional plan and side elevation of a construction equivalent to that shown in Figs. 5 and 6. Figs. 10 and 11 are respectively a side elevation and section of one end of a carriage embodying my invention and having a slightly-different connection from those shown in Figs. 1 and 2. Figs. 12 and 13 are sections of forms of friction devices used on wheel B.

One well-known manner of distributing and taking up the fall-rope carriers employed upon cableways is to provide storage-space for the reception of the carriers upon one or both ends of the carriage and to vary the amount of this storage space or spaces by a device which is operated by the rotation of the carriage-supporting or trackway wheels, so as to push the carriers in succession from the rear end of the carriage and to provide room for their reception upon the advancing end of the carriage.

My present invention is an improvement on the above construction in that it makes use of the reversal of the carriage to cause an additional variation in the storage-spaces for

the carriers, adding a small amount to the storage-space at the receiving or forward end of the carriage and decreasing by a small amount the storage-space at the discharging or rear end of the carriage. The purpose of this is to insure ample room for the reception of the carriers when being picked up and to insure their prompt discharge from the discharge end of the carriage. In other words, the reversal of the carriage is relied upon to decrease the storage-space for the carriers at the end from which they would be discharged to the least permissible and yet retain the proper number of carriers thereon, so that their discharge will begin promptly as soon as the carriage starts off, while at the opposite end of the carriage the storage-space is increased by the reversal of the carriage, so that there is ample room to receive and retain the carriers in place as they are reached.

In the drawings accompanying herewith embodiments of my invention are shown, which are in forms at present preferred by me, but which are not the only forms in which it may be embodied or the only forms now known to me.

I will first describe the form shown in Figs. 1 and 2. The frame A has trackway or supporting wheels B, B', and B² journaled therein and running upon the trackway-cable I, and wheels or sheaves R for the fall or hoist rope Q. The carriage-frame has parallel extensions *a a* at each end, between which, upon suitable guides *f'* (see Fig. 4) extending lengthwise the carriage, are mounted to slide the members F F', which are the equivalent of the horn usually used to receive and hold the fall-rope carriers, which for convenience I will call the "horn." The two parts of the horn are shown as each composed of an angle-iron having a raised portion *f* at its outer end to prevent the carriers being removed, except as they are pushed off, and a carrier-retaining spring member G, which are shown as flat bars supported from one end and extending above the horn or carrier-supporting members F and clamping or yieldingly holding the carriers between themselves and said horn.

The carriers P, as shown in all the figures except Fig. 8, have two rollers *p*, mounted

one on each side at their upper ends and adapted to run upon the parts F of the horn.

Fig. 7 shows a carrier in which a block p' , secured between the upper ends of the frame members, replaces the rollers.

The two angle-bars F are secured at one end to a cross-head E, which slides lengthwise the carriage in slots e in the side pieces a , which slots are, however, not solely relied upon to support and guide the cross-head. Journaled in suitable supports C upon the frame and held against end motion therein are threaded rods or shafts D D, which pass through threaded holes in the cross-head E.

The axle of supporting-wheel B is connected with the threaded rods or shafts D by means of bevel-gears b d , so that as the carriage travels along the trackway the shafts D D are turned in the cross-head, and this cross-head, with the horn which is connected thereto, is shifted lengthwise the carriage, the position of the horn in its path of travel corresponding proportionally with the position of the carriage along the cableway. The pusher H, which engages the innermost carrier, and together with the horn F by their relative positions determines the number of carriers which may be held, is also mounted so that it may have a limited reciprocation lengthwise the carriage. This pusher is shown as having slots h , through which pass bolts or pins h' on the sides a .

The supporting or trackway wheel B is provided with means by which the reversal of its rotation will shift the pusher in one direction or another. One means, which is shown in Figs. 5 and 6, consists of friction-plates I, carried in a recess in one face of the wheel, and a rod J, which connects a pin I^2 on the friction-plate with the pusher. The other means (shown in Figs. 8 and 9) consists of a pin I^2 on the wheel, which engages spring tappet-arms L L', pivoted on the connecting-rod J and engaging stops m m' . The stops m m' prevent the upper ends of the tappet arms or levers L L' from being separated more than is shown in the drawings; but they may be pushed inward or toward each other. The pin I^2 in its revolution will not be resisted by that one of the arms L or L' which it strikes upon the outer side, but will be resisted by the other and will therefore carry said arm and the link J along with it until the pin I^2 slips off of its end.

In Fig. 12 a friction-plate I^3 , having a conical bearing on the wheel B, is employed. This plate is held up to the wheel by a spring t , lying between the washer T and a thrust-collar V. In Fig. 13 a flat friction-plate I^4 is shown, which is engaged by washer T', carried by key U, which extends through a slot in the shaft and is acted upon by a spring t' , lying in a hole in the center of the shaft. This spring is backed by a bolt V' screwing in the bore of the shaft. These various devices are designed to furnish a constant friction which is strong enough to actuate the

pusher in either direction, but will yield when the pusher has been shifted from one extreme position to the other. The oscillation of the friction-plate or its equivalent is limited to an amount which will shift the pusher something less than the diameter of the circle of movement of the pin I^2 . The guides for the pusher form stops limiting its movement in either direction. The pusher, therefore, will not be moved except when the travel of the carriage is reversed.

The construction shown in Figs. 10 and 11 differs from that just described in employing the cross-head E as the pusher and connecting the rod J to the horn. The connection of the rod J with the wheel B is also transferred to the upper side of the wheel instead of the lower side, as shown in Figs. 2 and 6. This last is done only to get the proper relative motion of horn and pusher upon the reversal of the carriage. The action of this form is in all respects similar to that of the form shown in Figs. 1 and 2. It is somewhat preferred because it enables the length of the carriage to be kept somewhat less than with the other form.

In Fig. 11 I have shown a rod w , which limits the movement of rod J in one direction. In the other direction its motion is limited by engaging the hub of the wheel B or a member of the friction device.

By the above or equivalent means the relative position of the horn and pusher is changed suddenly a limited amount by the reversal in movement of the carriage in addition to the gradual change in relative position caused by the progress of the carriage.

I have shown the two horns at opposite ends of the carriage as being provided with duplicate mechanisms of the kind just described. It is, however, evident that both horns and pushers may be connected and the same mechanism be used to operate both. It is immaterial as affecting the principle of my invention which of the constructions shown be used, as each is but a reversal of the other.

The central feature of my invention consists of the gradual and continued changing of the relative position of horn and pusher by the travel of the carriage and the sudden and limited changing of their relative positions at the time of reversing the direction of travel of the carriage. I do not, therefore, wish to be limited to the construction and method of operation herein shown, but to claim any form of construction which secures the gradual and sudden changes in relative position of horn and pusher such as above stated.

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

1. The combination with a cableway-carriage and a horn thereon for the reception of fall-rope carriers, of means for shifting the horn by the reversal of the carriage.
2. The combination with a cableway-car-

riage, a horn for the reception of fall-rope carriers, and means actuated by the travel of the carriage to push the fall-rope carriers from the horn, of means for shifting the horn actuated by the reversal of motion of the carriage.

3. The combination with a cableway-carriage, a horn thereon for the reception of fall-rope carriers, and a pusher for removing the carriers from said horn, of means for shifting the relative position of horn and pusher by the reversal of the carriage.

4. In a cableway-carriage the combination with a horn for the reception of rope-carriers, a pusher for disengaging the carriers and means for causing relative movement of horn and pusher by the travel of the carriage, and means for causing an additional relative movement by the reversal of the carriage.

5. In a cableway-carriage the combination with a horn for the reception of rope-carriers, a pusher for the disengagement of said carriers, and means for causing a relative movement of horn and pusher, of means for causing an additional relative movement of horn and pusher by the reversal of the carriage.

6. In a cableway-carriage the combination with a horn for the reception of rope-carriers, a pusher for the disengagement of said carriers, and means for causing a relative movement of horn and pusher, proportioned to the travel of the carriage, of means for causing an additional relative movement of horn and pusher by the reversal of the carriage.

7. In a cableway-carriage, the combination with a horn for the reception of rope-carriers and a pusher for disengaging said carriers, of means for moving one of said members relatively to the other by the travel of the carriage, and means for moving the other by the reversal of the carriage.

8. In a cableway-carriage, the combination with a horn for the reception of rope-carriers and a pusher for the removal of said carriers, said horn and pusher being mounted to have lengthwise movement, of means for moving one of said members by the travel of the carriage and the other by the reversal of the carriage.

9. In a cableway-carriage, the combination with a horn for the reception of rope-carriers and a pusher for the removal of said carriers, said horn and pusher being mounted to have lengthwise movement, of means for giving one of said members a gradual movement proportioned to the travel of the carriage, and for giving the other a definite movement by the reversal of the carriage.

10. In a cableway-carriage, the combination with a horn adapted to receive rope-carriers, and a pusher for removing said rope-carriers, of means for gradually changing the relative longitudinal position of pusher and horn during the travel of the carriage, and means for causing a definite relative longitudinal movement of horn and pusher by the reversal of the carriage.

11. In a cableway-carriage the combination

with means for receiving and storing fall-rope carriers thereon, of means operated by the reversal of travel of the carriage for varying the capacity of said storage means.

12. In a cableway-carriage the combination with means at each end of the carriage for receiving and storing fall-rope carriers, and means operated by the reversal of travel of the carriage for increasing the capacity of the storage means at one end of the carriage and for decreasing the capacity of the storage means at the other end of the carriage.

13. In a cableway-carriage the combination with a horn or fall-rope-carrier receiver, a pusher, means for changing the relative position of horn and pusher operated by the travel of the carriage, and means for additionally changing the relative position of horn and pusher, actuated from a carriage-wheel by the reversal thereof.

14. In a cableway-carriage the combination with a horn or fall-rope-carrier receiver, a pusher, means for changing the relative position of horn and pusher operated by the travel of the carriage, and means for additionally changing the relative position of horn and pusher, frictionally actuated from a carriage-wheel at the time of reversal thereof.

15. In a cableway-carriage the combination with a horn or fall-rope-carrier receiver, a pusher, means for changing the relative position of horn and pusher operated by the travel of the carriage, additional means for changing the relative position of horn and pusher, means for operating the said additional shifting means by the travel of the carriage, and means for limiting the action of said additional shifting means to a fixed amount.

16. In a cableway-carriage the combination with a horn or fall-rope-carrier receiver, a pusher, means for changing the relative position of horn and pusher operated by the travel of the carriage, and means for additionally changing the relative position of horn and pusher, frictionally actuated from a carriage-wheel at the time of reversal thereof, and means for limiting the action of said additional shifting means to a fixed amount.

17. In a cableway-carriage the combination with a horn or fall-rope-carrier receiver, a pusher, means for changing the relative position of horn and pusher, operated by the travel of the carriage, a crank-pin frictionally driven from one of the carriage-wheels, a stop limiting the angular travel of said crank-pin, and connections from said crank-pin whereby the relative positions of horn and pusher may be changed.

18. A horn for receiving fall-rope carriers comprising a carrier-supporting member and a yielding member parallel with said supporting member, said members being adapted to receive and yieldingly grasp a part of the fall-rope carriers between them.

19. A horn for the reception of fall-rope carriers comprising a supporting member and a spring-arm secured thereto by one end and extending parallel with the supporting member, said members being adapted to receive a part of the fall-rope carriers between them.
20. A fall-rope carrier having externally-projecting rollers adapted to engage the storage-horn.
- 10 21. A fall-rope carrier having rollers on op-

posite sides thereof and external the frame adapted to engage the horn.

In testimony whereof I have signed my name to this specification in the presence of the two subscribing witnesses.

JACKSON G. CROWDES.

Witnesses:

AMOS HOLBROOK,
R. S. CARTER.