

No. 841,821.

PATENTED JAN. 22, 1907.

I. D. SMEAD.
CABLE TRACTION DEVICE.

APPLICATION FILED OCT. 9, 1906.

3 SHEETS—SHEET 1.

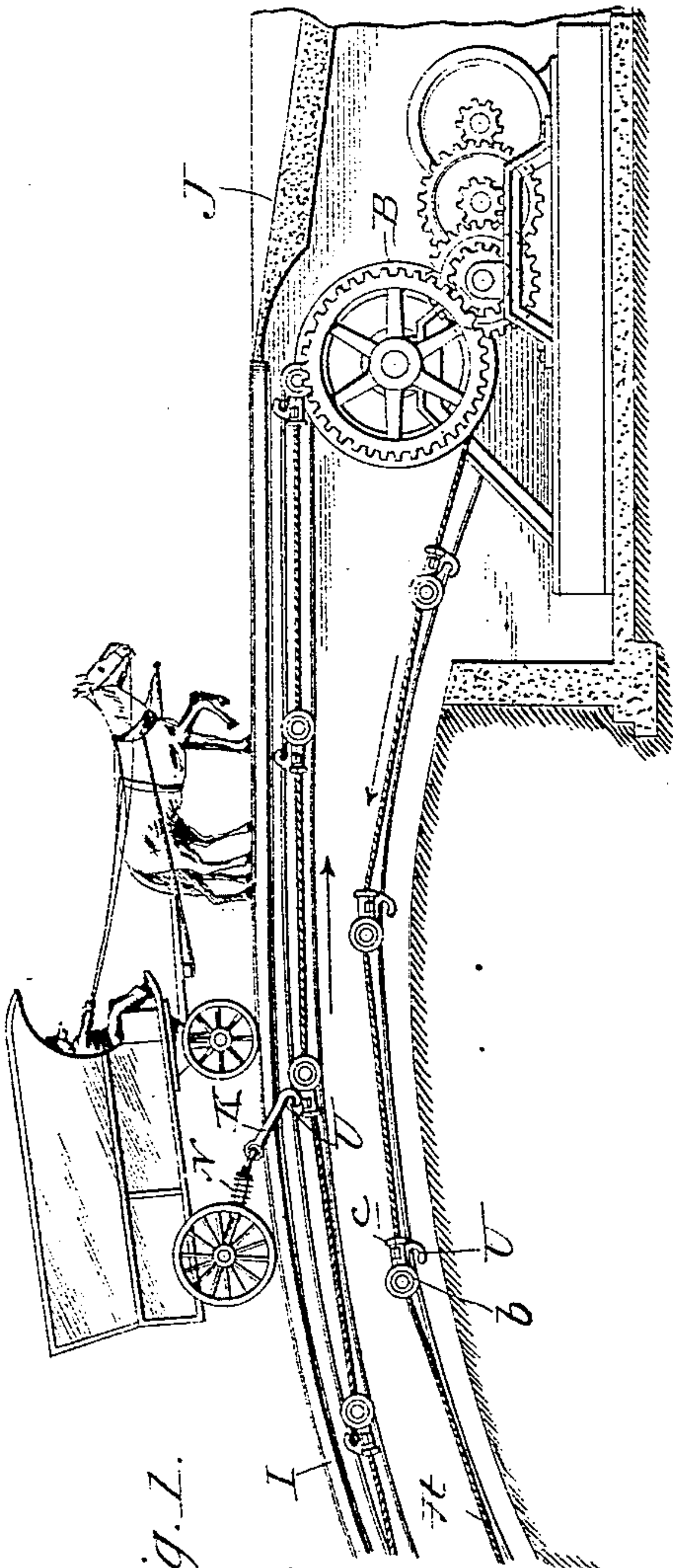


Fig. 1.

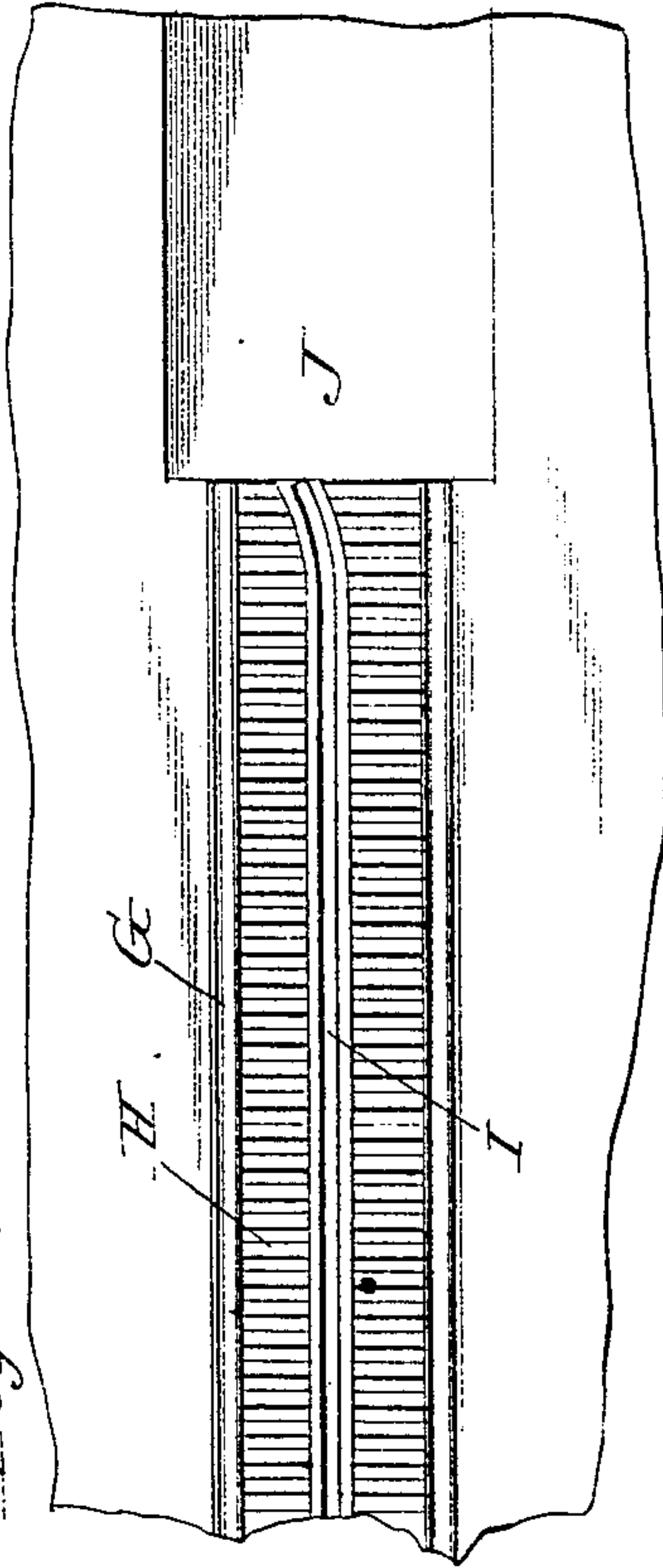
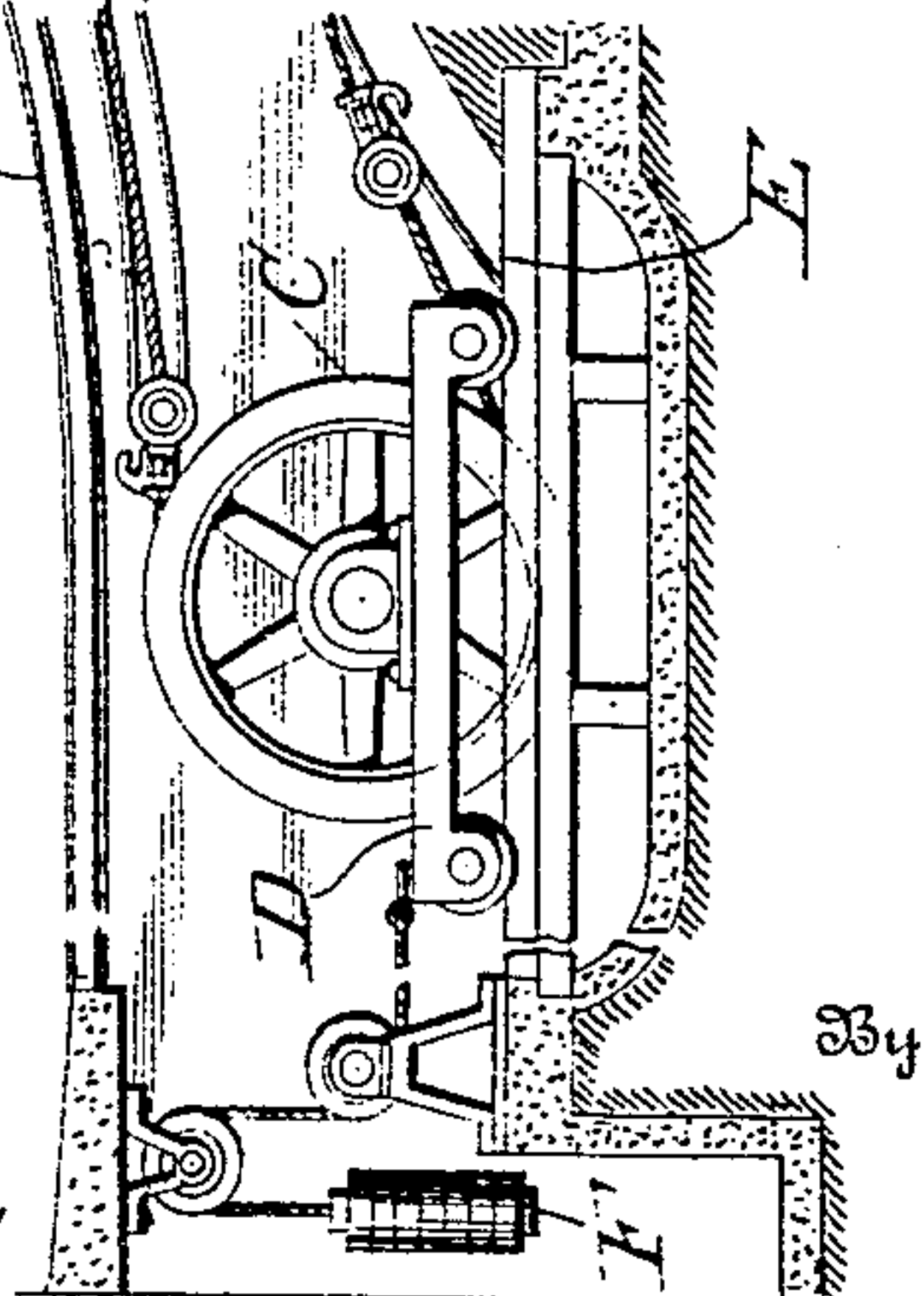


Fig. 2.



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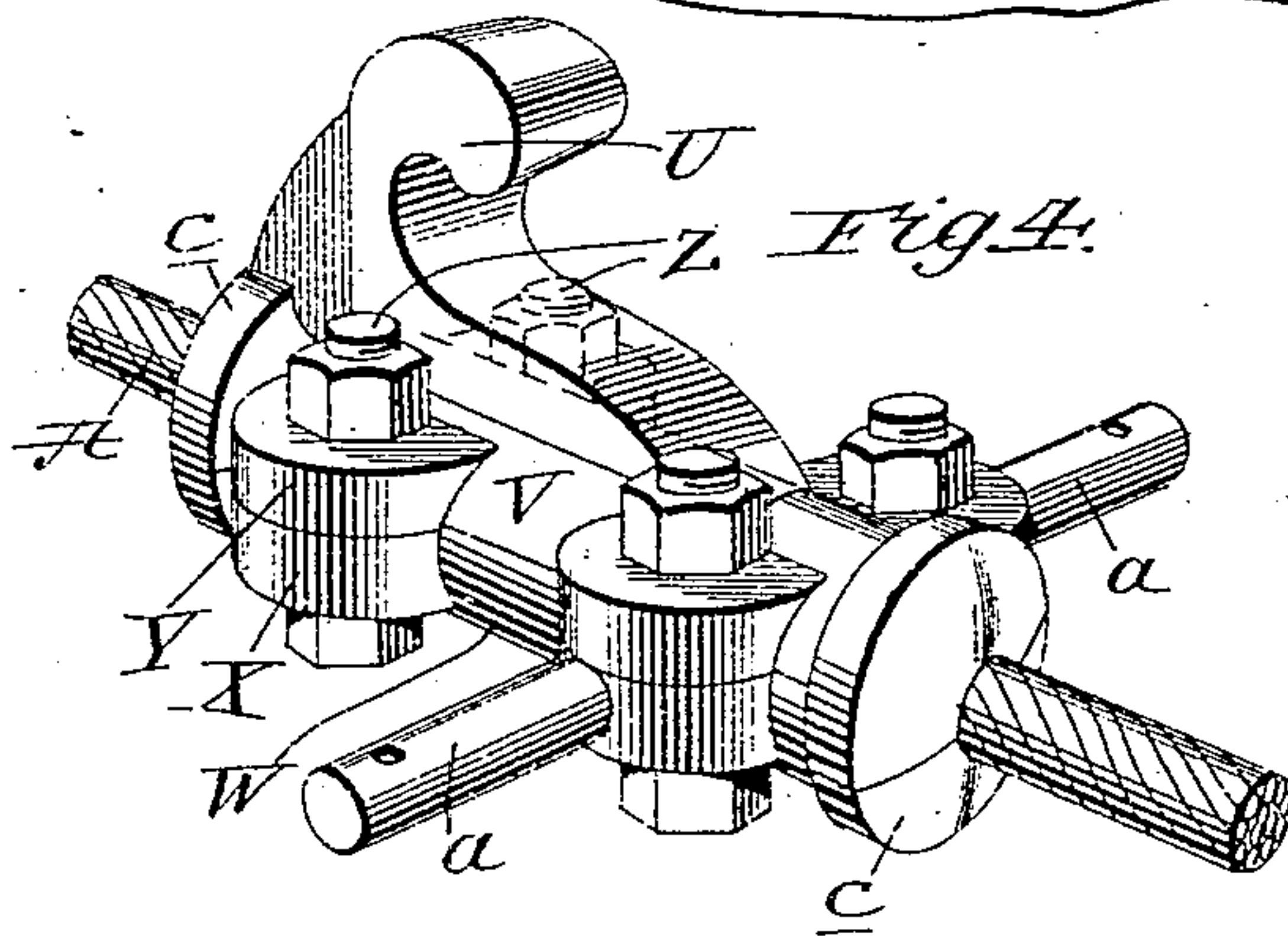
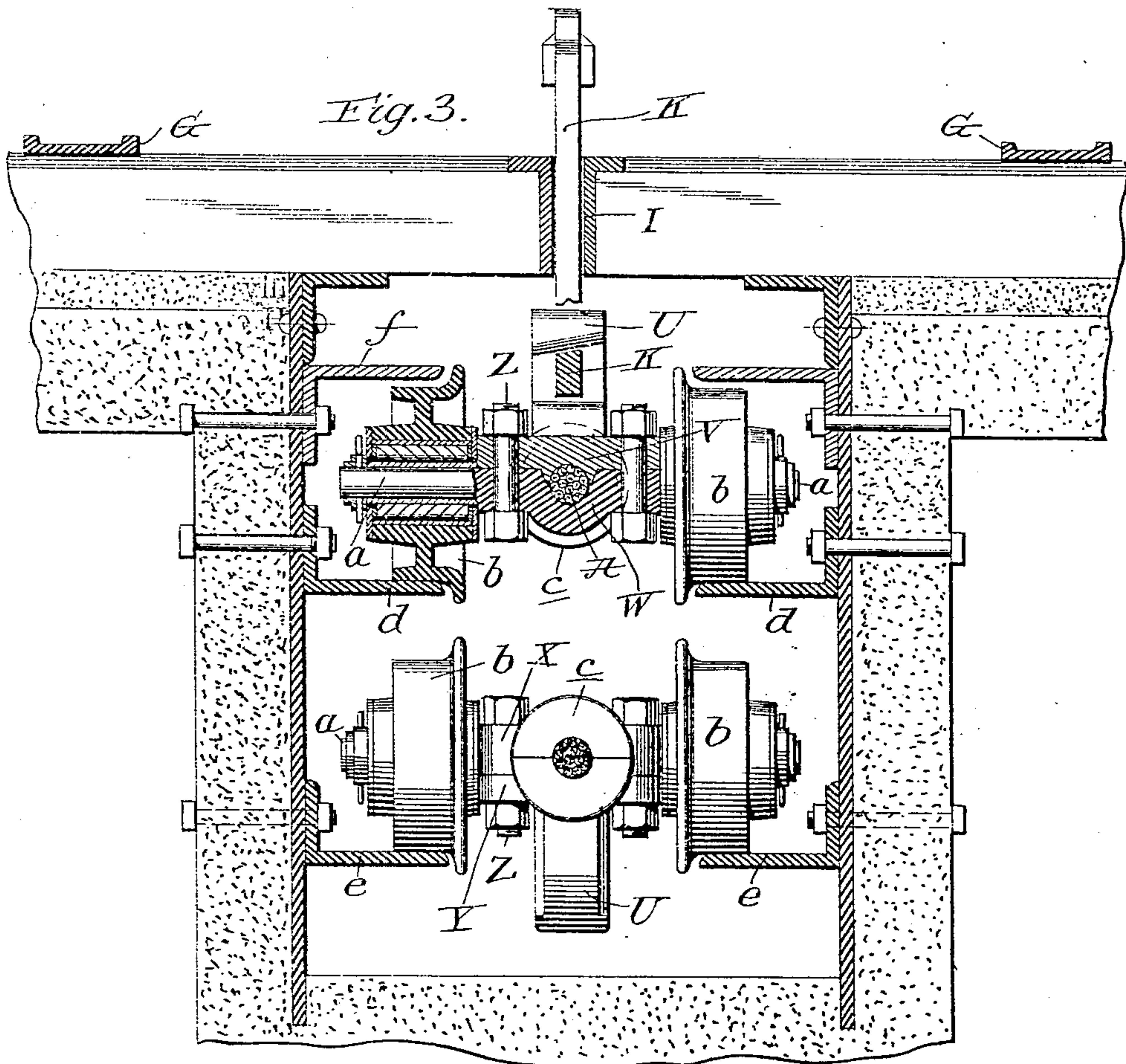
Attorneys

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3 SHEETS—SHEET 2.



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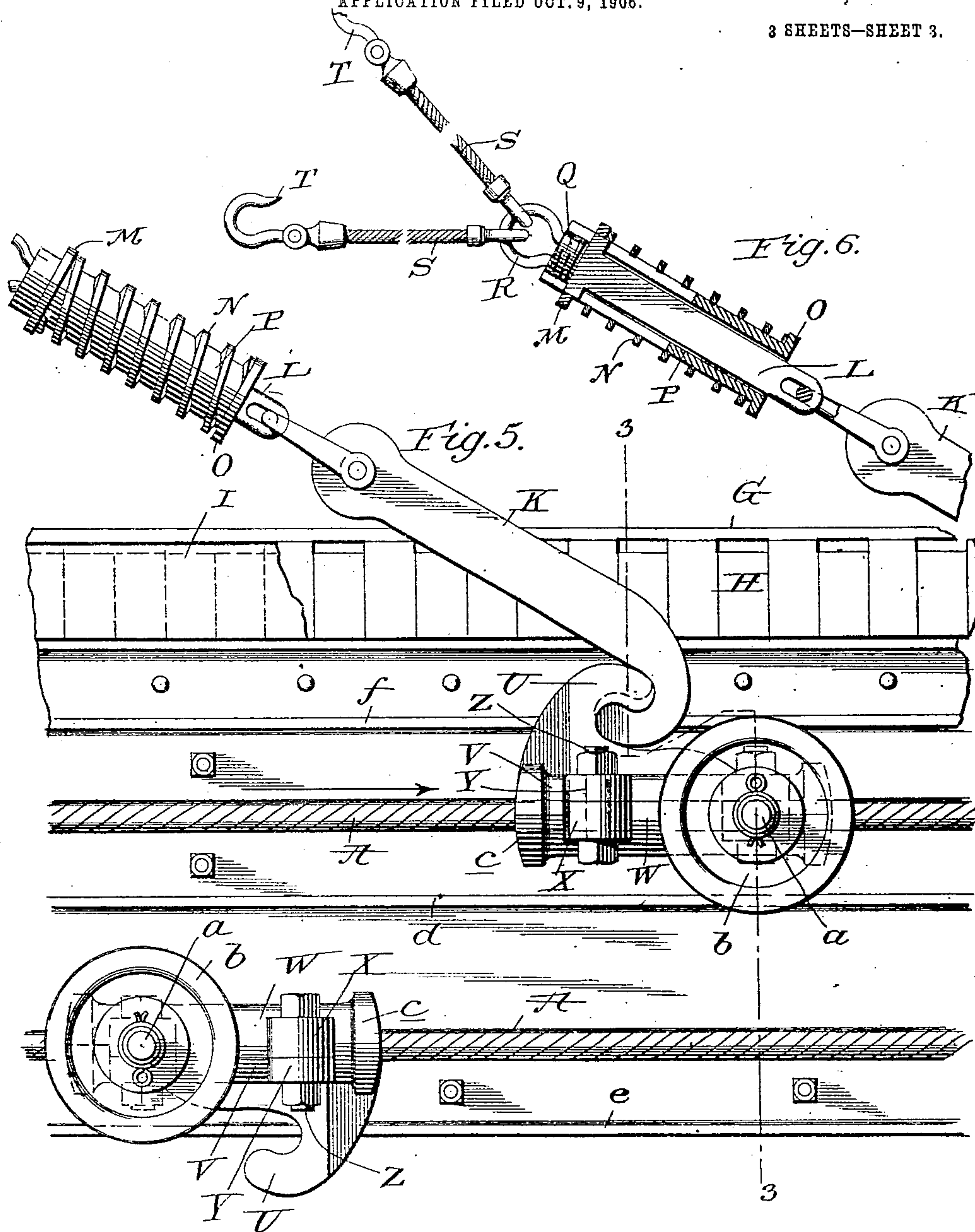
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

ISAAC D. SMEAD, OF CINCINNATI, OHIO.

CABLE-TRACTION DEVICE.

No. 841,821.

Specification of Letters Patent.

Patented Jan. 22, 1907.

Application filed October 9, 1906. Serial No. 338,157.

To all whom it may concern:

Be it known that I, ISAAC D. SMEAD, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Cable-Traction Devices, of which the following is a specification.

My present invention pertains to improvements in cable-traction devices, and is designed more particularly for use in hauling loads up inclined surfaces.

The invention will be best understood upon reference to the accompanying drawings, wherein—

Figure 1 is a vertical sectional view of the apparatus; Fig. 2, a top plan view of the roadway; Fig. 3, a transverse vertical sectional view taken on the line 3 3 of Fig. 5; Fig. 4, a perspective view of one of the combined hooks or coupling-supporting and cable-driving devices; Fig. 5, a longitudinal sectional view of a portion of the apparatus, showing the parts on a somewhat enlarged scale; and Fig. 6, a detail view of one of the attaching devices by which the wagons or other vehicles are temporarily connected with the cable for the purpose of drawing the vehicles up the incline.

The main object of the invention is to provide a simple and efficient apparatus for hauling wagons or the like up inclines, the construction embodying, among other things, means for automatically disengaging the hook when the upper end of the incline is reached, means for driving the cable without applying friction thereto, and means for properly supporting the cable throughout the upper and lower stretches thereof.

The invention has also for its object to provide a combined engaging member for the hook which is attached to the wagon, supporting means for the cable, and a driving button or projection which engages the sprocket-wheel, through which motion is imparted to the cable.

In Fig. 1 is shown an embodiment of the invention, the endless cable A passing around a sprocket-wheel B, located in a pit formed or provided at the upper end of the conduit or way in which the cable runs. Motion is imparted to said sprocket-wheel through gearing driven from any suitable source of power—such, for instance, as an electric motor, steam-engine, or the like.

A second pit is formed at the lower end of

the conduit, and a sprocket or sheave C is placed therein, said wheel being mounted upon a carriage or table D, which in turn works upon ways or tracks E. A weight F is connected to the carriage D and serves to maintain the proper tension upon the cable.

Where the system is installed, I will preferably employ iron tracks or ways G for the wheels of the vehicles, and if the road or incline be exceptionally steep will also employ creosoted timbers or the like. As will be seen upon reference to Fig. 5, these are so arranged that every other timber stands above the next adjacent timber, so that a roughened roadway is formed intermediate the tracks G, which will afford a good footing for the animals attached to the wagons and keep them from slipping in cold weather.

A slot I is formed between the adjacent ends of the timbers, the upper end of the slot being inclined to one side, as best shown in Fig. 2, for the purpose of securing the detachment of the hook when the wagon has reached the upper portion of the hill or incline and the team has passed downward upon the reversely-inclined section J of the road. This downwardly-inclined section enables the horses to secure absolute control of the vehicle just at the time the hook is disengaged from the cable.

The attaching device will preferably be made as shown in Figs. 5 and 6—that is to say, it comprises a hook K, pivotally connected to the lower end of a draw bar or rod L, the bar being provided with a ring or head M at the upper end thereof. Said ring bears upon a spring N, the opposite end of the spring bearing upon a flange or collar O, formed upon the lower end of a slotted tube P. The upper end of the tube carries a plug Q, to which is connected an eye R, having attached thereto short sections of cable S, which in turn carry hooks T at their outer ends, said hooks being designed when in use to be attached to the rear axle of the vehicle which is to be drawn up the incline.

The free end of the hook K engages a hook U, formed upon the upper member V of the combined clamp and supporting member. As will be seen upon reference to Figs. 3 and 4 and the dotted lines in Fig. 5, the hook U is provided with an inclined or beveled face, and the lower end of the hook K is complementary in form. This will cause the parts to slide out of engagement when hook K is

passing into the curved portion of the slot formed at the upper end thereof, and thus automatically disengage the hook K from hook U as the team passes onto the reversely-inclined portion J of the roadway. This is a feature of considerable importance in that it permits the cable to be run continuously and does not necessitate the stoppage of the team when it arrives at the upper end of the incline. So long as the hook K remains in the straight portion of the slot I the parts will be in engagement.

The lower member W of the clamp is provided with laterally-projecting ears X, which are of the same shape as the ears Y, formed upon the upper member V. Suitable bolts Z are passed through openings formed in these ears, and thus securely clamp the cable, which is seated in recesses formed in said members V and W. Extending laterally from each side of the lower member W is a stud-axle *a*. These axles serve to support flanged wheels *b*, which will be preferably mounted upon roller-bearings, so as to reduce friction.

The members V and W are likewise provided at each end with a projection, which when the parts are assembled form disks or buttons *c*, coacting with the sprocket-wheel to drive the cable.

Extending inwardly from each side of the conduit and adapted to support the wheels *b* of the upper stretch of the cable are tracks or ways *d*, while beneath said tracks and in a plane with the lower stretch of the cable are similar tracks *e*. Arranged above the wheels of the upper stretch of the cable are rails or tracks *f*, against which the wheels *b* bear when a load is attached to the cable, as shown in Fig. 1. In other words, the upper rails *f* prevent the cable from being lifted and serve to maintain the parts in their proper relation.

Upon reference to Fig. 3 it will be noted that the hook U is of a width considerably greater than the hook K, so that there is no danger of the parts becoming disconnected until the hook K passes into the upper inclined end of the slot I. It is also to be noted that as the horses pass onto the reversely-inclined portion J of the roadway they assume a part of the weight of the load, and as a consequence the hook K may be readily forced out of engagement with the hook U by the curved portion of the slot.

By having the cable driven by the combined engaging and supporting device it is not subjected to any frictional wear.

For the sake of convenience the members V and W, with their attached parts, may be termed a "supporting-truck" for the cable.

Having thus described my invention, what I claim is—

1. In combination with an endless cable; means for driving the same, the upper and lower stretches of the cable being in substan-

tial vertical alinement; a series of trucks secured to the cable; a track for supporting the trucks carried by the lower stretch of the cable; a track for supporting the trucks upon the upper stretch of the cable; and a third track to prevent upward displacement of the trucks on the upper stretch of the cable.

2. In combination with a conduit provided with a slot; an endless cable mounted therein; a series of supporting-trucks secured to the cable; means for driving the cable; tracks for supporting said trucks; a fixed hook or member carried by each of the trucks, said hook standing at all times within the conduit; an engaging hook passing into the conduit and adapted to engage one or another of the hooks carried by the trucks; and means for automatically shifting the engaging hook and disengaging the same when the hooks have reached a predetermined point in the course of travel of the cable.

3. In combination with an endless cable; a series of trucks secured thereto; a hook carried by each of said trucks, the hook being provided with an engaging face inclined toward one side; and a second hook provided with a complementary face, said second hook being arranged to pass through a slot above the upper stretch of the cable, the slot being inclined to one side at a predetermined point of travel of the cable, whereby said hooks will be disengaged.

4. In combination with an endless cable; means for driving the same; a conduit in which said cable is placed; a series of trucks secured to said cable; supporting-tracks for said trucks mounted in the conduit; a hook formed upon each of said trucks, said hook being provided with an inclined face; and an engaging member arranged to cooperate with said hooks, the engaging member being provided with a reversely-inclined face and arranged to pass into the curved portion of a slot formed above the conduit, whereby said parts will be disengaged when the engaging member reaches said curved portion, substantially as described.

5. In combination with an inclined way or road; a conduit located beneath said road; an endless cable mounted within said conduit; means for driving said cable; a series of trucks secured to said cable; tracks adapted to support the wheels of the trucks upon the lower stretch of the cable; a second pair of tracks arranged to support the wheels of the trucks upon the upper stretch of the cable; a third pair of tracks extending inwardly over the wheels of the trucks of the upper stretch of the cable; a hook carried by each of said trucks; and an engaging member arranged to cooperate with said hooks, the faces of said hooks and engaging member being reversely inclined, whereby when the engaging member reaches the curved

portion of a slot formed above the conduit it will move to one side and out of engagement with a hook.

6. In combination with an endless cable; 5 a series of combined engaging and supporting members secured thereto, each of said members being formed of two parts arranged to clamp the cable, one portion carrying a hooked member while the other portion is 10 provided with laterally-extending axles; wheels arranged upon said axles; and means for supporting said wheels throughout the various stretches of the cable.

7. In combination with an inclined road- 15 way; a conduit arranged beneath the same; an endless cable mounted in said conduit; hooks carried by said cable; an engaging member arranged to cooperate with said hooks and to be thrown out of engagement 20 therewith when said member reaches the upper end of the roadway; and a reversely-inclined roadway arranged adjacent to the up-

per end of the first inclined roadway, whereby the draft upon the engaging member will be relieved when it is moved out of engage- 25 ment with a hook.

8. In combination with a conduit provided with a slot having a laterally-deflected portion adjacent to one end thereof; an endless cable mounted in the conduit; means 30 for maintaining the cable in its proper course of travel within the conduit; a hook carried by the cable; a second hook passing down through the slot and arranged to engage the hook on the cable; and means for 35 driving the cable.

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

ISAAC D. SMEAD.

Witnesses:

WM. M. RAYNOLDS,
G. A. TENHUSOL.