

W. H. H. HUNTER & J. HARGITT.

MARINE RAILWAY CARRIAGE.

No. 295,014.

Patented Mar. 11, 1884.

Fig. 1.

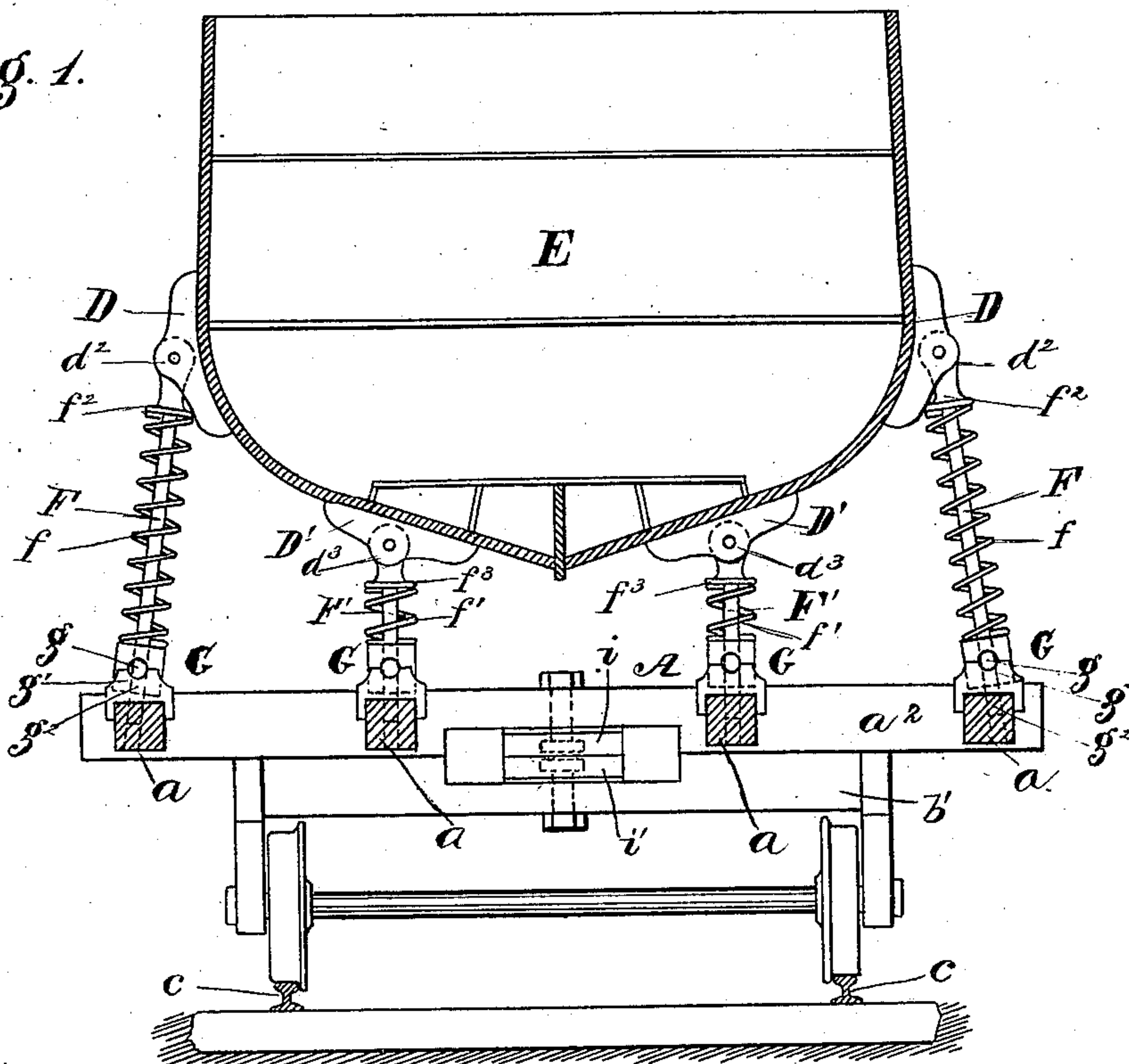


Fig. 2.

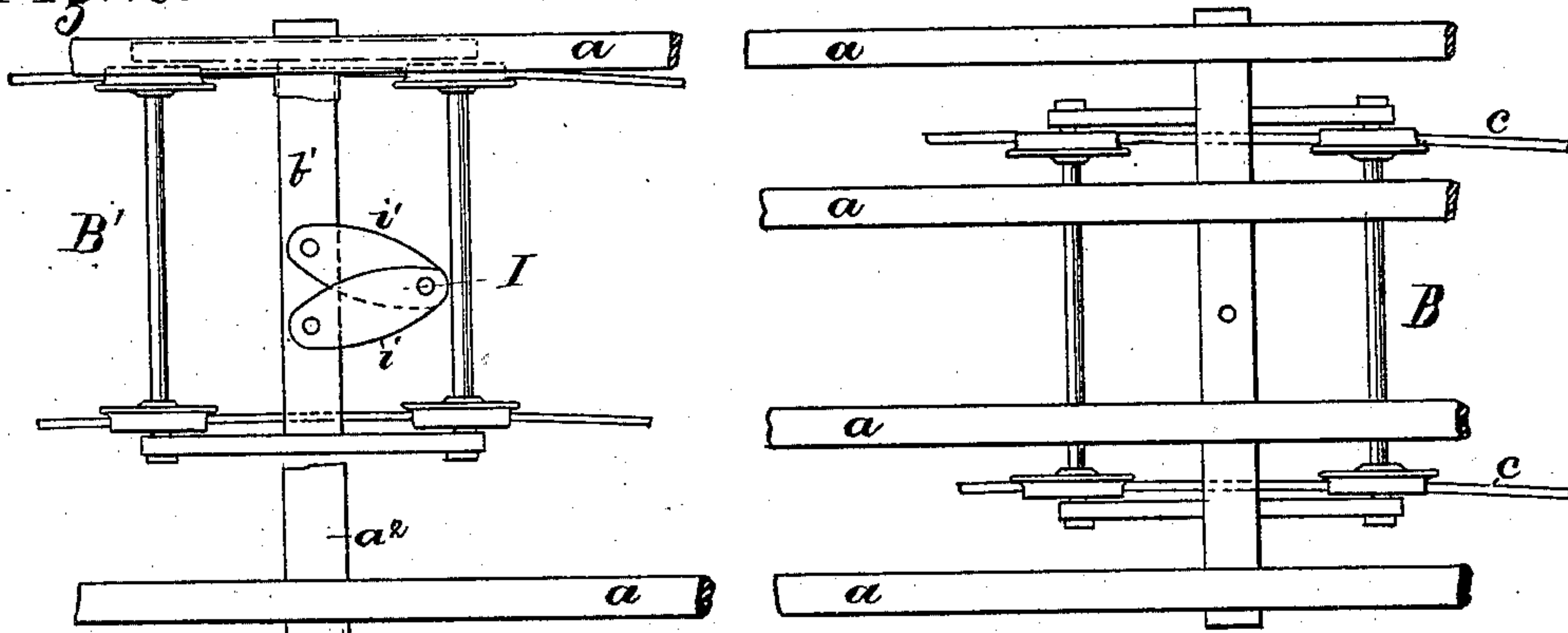
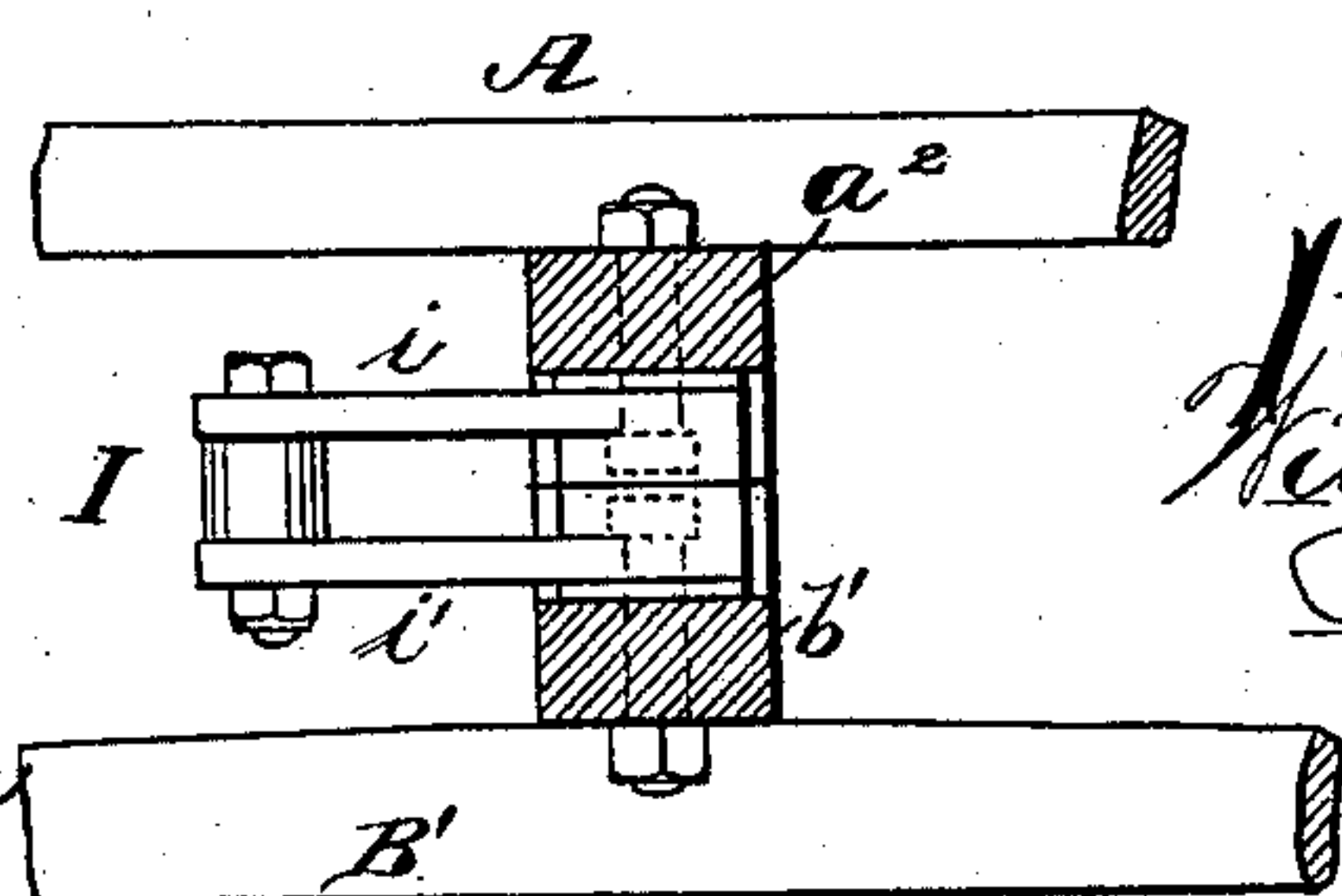


Fig. 3.



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(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

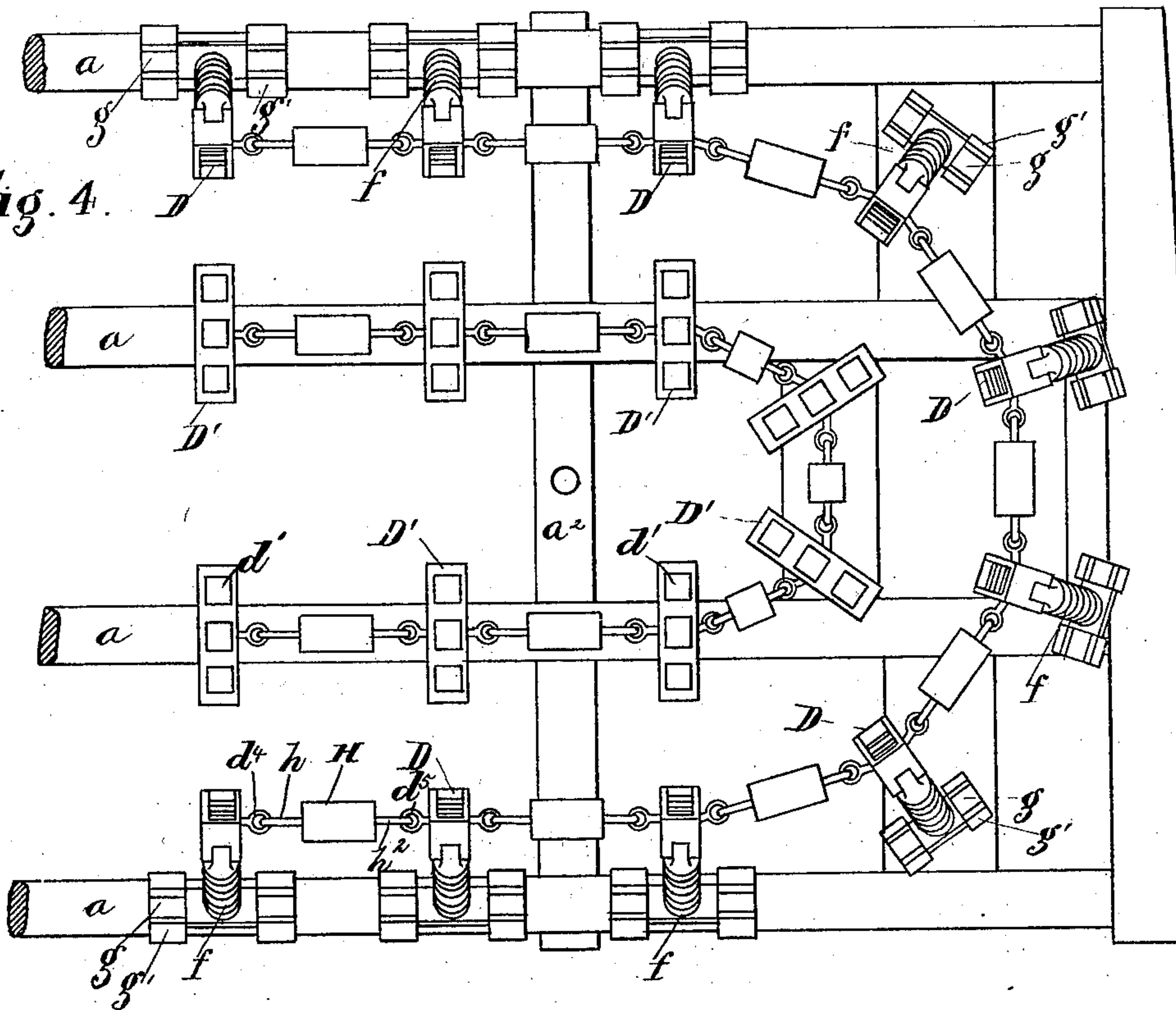


Fig. 5.

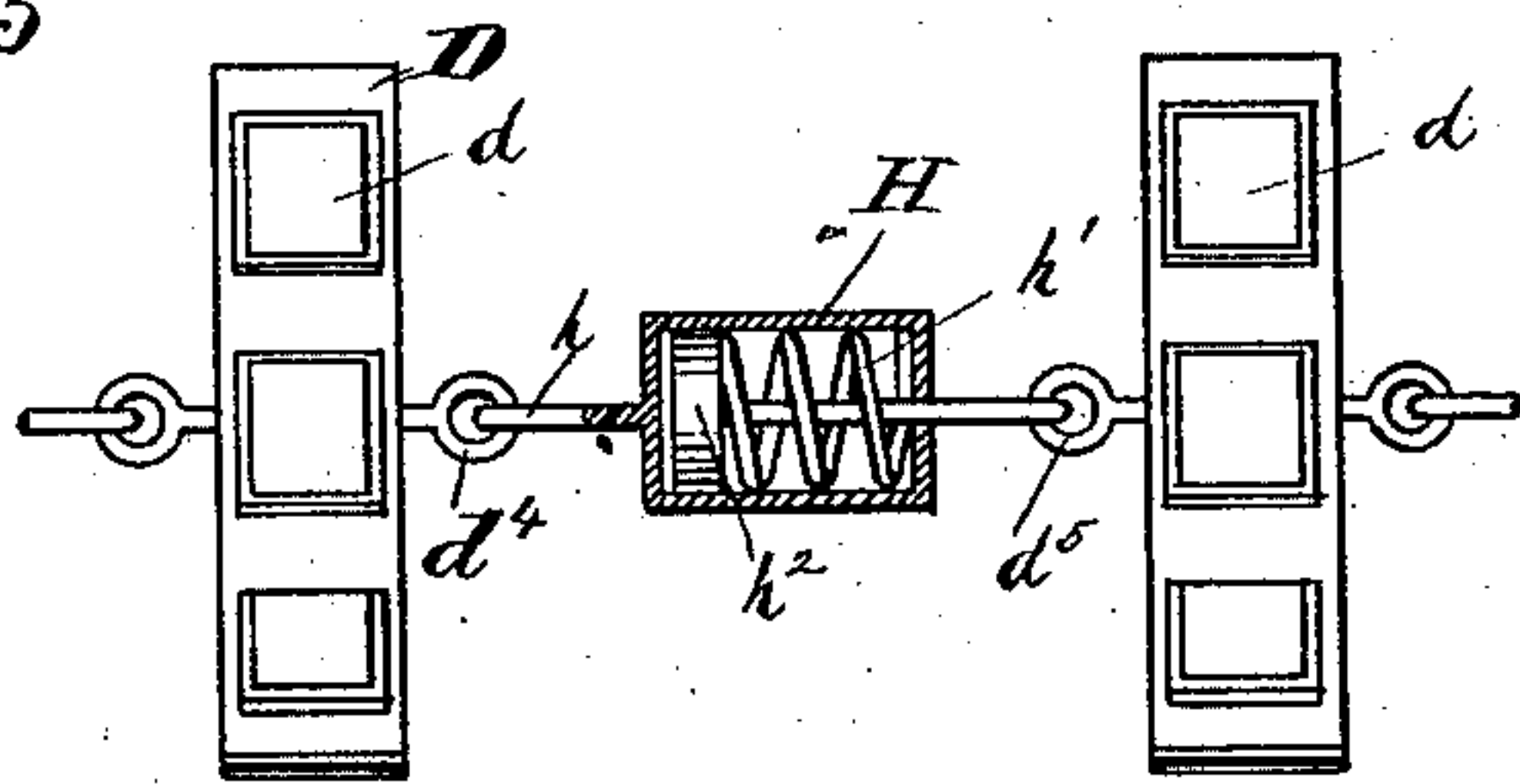


Fig. 6.

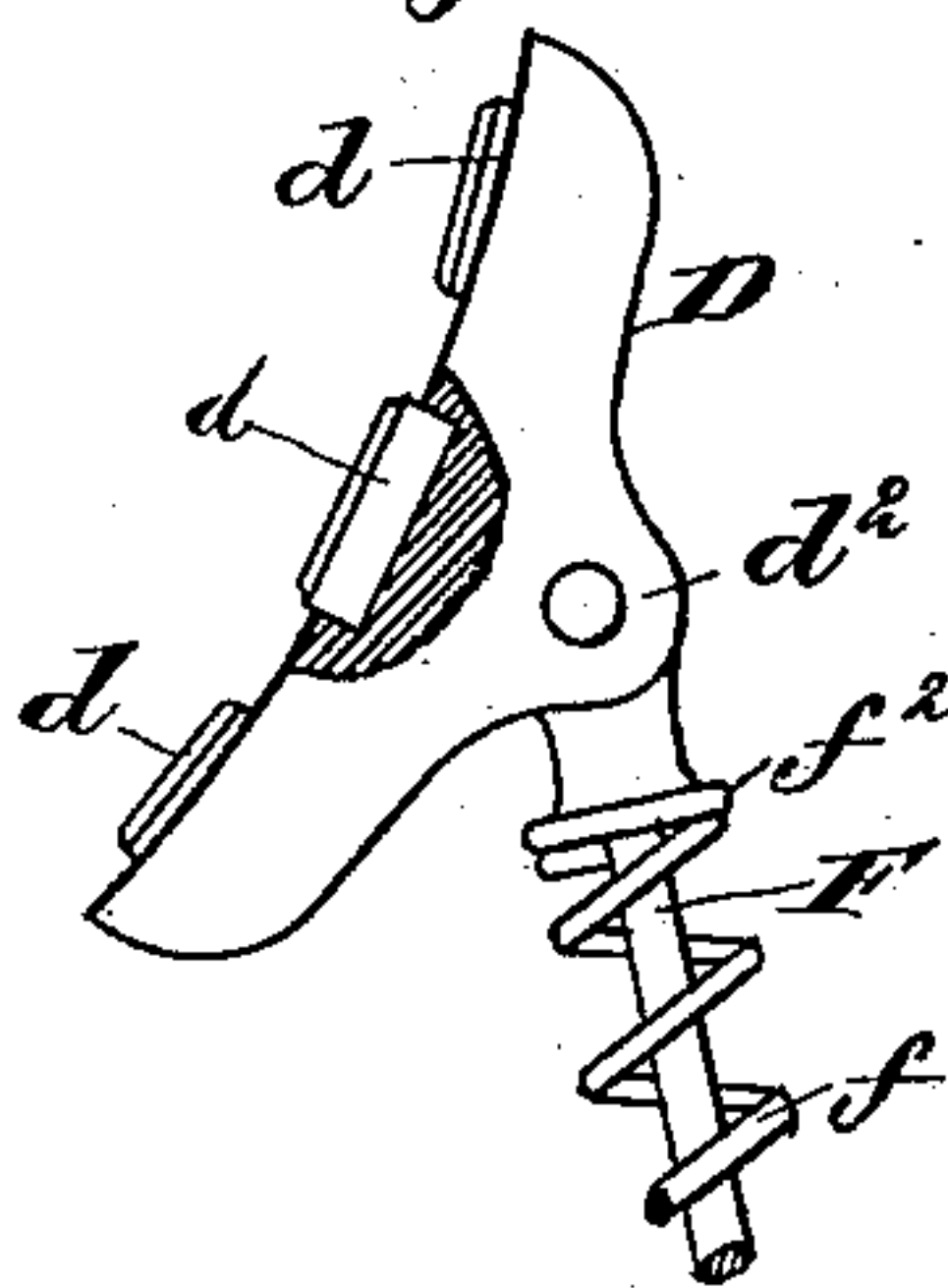
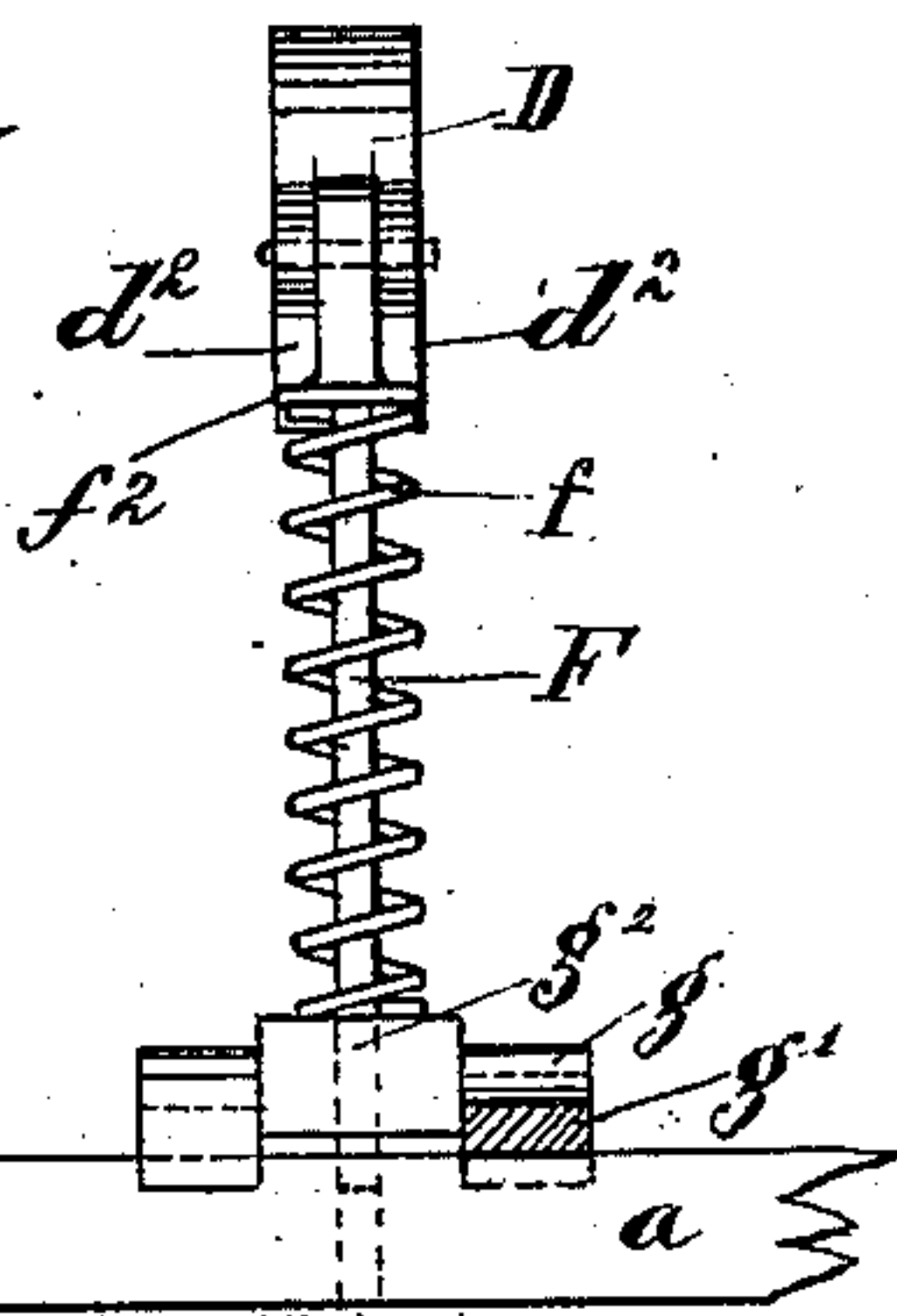


Fig. 7.



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# UNITED STATES PATENT OFFICE.

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## MARINE-RAILWAY CARRIAGE.

SPECIFICATION forming part of Letters Patent No. 295,014, dated March 11, 1884.

Application filed April 19, 1883. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM H. H. HUNTER, of Cincinnati, in the county of Hamilton and State of Ohio, and JERVIS HARGITT, of Hamilton, in the county of Butler and State of Ohio, have invented certain new and useful Improvements in Marine-Railway Carriages, of which the following is a specification.

Our invention is in the nature of an improvement upon devices for transporting ships or other vessels upon railways, and has for its object, first, the construction and arrangement of a system of automatically-adjustable ribs or bearers, which are made to conform to the hull of a vessel in such a manner that the supporting effect of such ribs or bearers shall be substantially like the supporting effect of water; and, second, in mounting said device upon a railway-carriage in such a manner that any desired number of carrying-trucks may be used, provision being made for the lateral play of the intermediate trucks in passing curves in the line of railway, all of which will be fully described hereinafter.

To make our invention clear, it is necessary to suggest that in many cities fresh-water canals enter from the interior country, which canals, while useful for the purposes of transportation, are objectionable as open water-ways through valuable portions of the cities, and many legislative schemes in various states have been proposed to abate so much of said canals as pass through the cities and supply the loss of water-ways by railroads. All of these schemes, however, contemplate the transfer of cargoes from vessels to railway-cars or from railway-cars to vessels, according to the direction of the freight, which is objectionable upon the score of cost and delay in handling goods. In our invention we propose to maintain the bulk intact in the vessel, and to transport the vessel itself and its unbroken cargo from the canals through the cities to the warehouses, or from the warehouses, after loading, back again to the canals, by means of our improved marine-railway carriage and a suitable permanent way. This we propose to accomplish in the following manner: Canals consist of a series of consecutive levels, from one of which levels vessels are transferred to the next

level by lockage. We propose to cut off the water-way from the city at the nearest convenient lock, or by construction of a special lock at a convenient point, and from such lock construct an ordinary railway of such dimensions as may be requisite to pass the tonnage which will be carried from the canal to the city, or vice versa. The railway beginning at the last lock of the canal, we open the lower of the two lock-gates and push in by locomotive power the device which forms the special object of this specification. The lock is then closed, filled with water from the level of canal above, the upper lock-gates then opened, and the vessel to be transferred then floated in. The upper gates of the lock are then closed, the sluice-gates below opened, and the level of water (in the lock) reduced gradually, permitting the vessel to settle gently and easily in the embrace of the automatically-adjustable ribs or bearers of our improved device, the ribs or bearers being so constructed and arranged independently and in relation to each other as to cause the entire system of ribs to adapt itself automatically to the form of the hull of the vessel. The lower lock-gates are then opened, and the carriage, with its imposed load, hauled out by locomotive-power to its destination. The reverse takes place in transferring a vessel from the warehouse or railway to the canal.

In the accompanying drawings, which are confined to so much of our invention as relates to the improved carriage for vessels, we have shown in Figure 1 a cross-sectional elevation of a vessel and our improved device. Fig. 2 is a partial plan of the carriage, showing the method of attaching the intermediate railway-trucks. Fig. 3 is a detached view of the devices for connecting the intermediate trucks to the frame of the carriage. Fig. 4 is a plan of the upper works of the carriage. Fig. 5 is a detached view of the devices for connecting the ribs or bearers together. Fig. 6 is a side elevation, and Fig. 7 is a rear elevation, of one of the ribs and adjacent parts.

Similar letters of reference indicate similar parts.

A is a horizontal frame composed of longitudinal timbers  $a$  and transverse timbers  $a^2$ ,



properly fitted together and braced to form a stiff platform for the reception of the upper works of the device.

B B' are railway-trucks of the customary form, and of such dimensions as may be required for the tonnage carried.

C is a permanent way provided with T-rails *c c*.

D D' D' are the adjustable ribs or bearers, having a form of inner surface somewhat similar to the corresponding configuration of the hull of the vessel E, and provided upon the face or inner surface with rubber bearing-blocks or buffers *d d' d' d'* sunk, as shown in Fig. 6, in recesses formed in the face of the rib. Upon the back of the parts D D' lugs *d'' d''* are formed, between which are pivoted the adjustable standards or spindles F F'. The manner of attaching the ribs D D' to the spindles F F' permits the former to play through a large arc in adapting themselves, as it were, to the hull of the vessel E.

*f f'* are heavy spiral springs, mounted upon their respective spindles F F'.

G G are adjustable abutments, provided with trunnions *g*, bearings *g'*, and eyes or cylindrical openings *g''*, through which the spindles F F' play at right angles to axis of the abutments. The upper ends of the springs *f f'* bear against the shoulders *f'' f''* of the spindles, and the lower ends against the upper faces of abutments G G. The combined effect of the springs *f f'* for the several series of ribs or bearers D D' is sufficient to form a strong elastic cradle for the reception of the vessel E, and to support the vessel as well, and substantially like the water.

In Figs. 1 and 4 are shown two series of ribs or bearers, D D', but in the practical application of our invention the series will be multiplied, so as to impinge against more than one-half of the outer surface of the hull. The ribs or bearers are united one to the other around the horizontal outline of the vessel by means of the elastic connection H *h h' h''*, of which H is a cylindrical spring barrel or case, attached by means of the rod *h* to the eye-bolt *d''*, Fig. 5, and enveloping a strong spiral spring, *h'*, attached by means of the rod and piston *h''* to the eye-bolt *d'* of the next rib. The connection of one rib to the next by means of the device above described is continuous for the entire circumference of each series, and permits the ribs to expand or contract laterally to receive and grip the hull of the vessel E.

The device H *h h' h''*, in conjunction with the devices F F', *f f'*, and G G, provide for a free vertical and lateral adjustment of the ribs D D' to any peculiarity of form or dimensions of vessel. The vessel E, in settling gradually into the cradle or upper works of the carriage as the water is drawn off from the canal-lock, forces the ribs or bearers D D' downward and outward until the load of vessel and cargo is balanced by the tension or pressure of the

springs *f, f'*, and *h*, in which condition, and with a sufficient number of ribs, the cradle furnishes a supporting effect very like that of water.

In mounting the device upon the railway-trucks B B', we connect the two end trucks, B, to the frame or platform A in the customary manner—*i. e.*, by means of pivot-seats and king-bolts; but the intermediate trucks, of which any convenient number may be used, are connected to the frame A by means of the shear or flexible clevis I, one end, *i*, of which is attached to the bolster or cross-beam *a''* of the frame, and the other end, *i'*, of which is attached to the corresponding bolster or cross-beam, *b'*, of the truck B'. By means of this connection in passing curves in the line of permanent way, the intermediate trucks, B', are permitted to play laterally under the frame to the right or left while carrying their portion of the load without straining the frame A or its imposed load of upper works and vessel E. The cross-beams *a''* and *b'* are cut away at their centers, (see Fig. 1,) to permit the shear or clevis to swing laterally, and the frame A is supported vertically on the truck B' by the end portions of the said cross-beams resting against each other, the beams *a''* being adapted to slide transversely on the beams *b'*.

In adapting the carriage to the requirements of practical use certain mechanical changes in the special devices H *h h' h''*, and F F', *f f'*, and G *g g'* may become necessary; but the functions of the devices mentioned will be unchanged, and such variations in detail of construction will not depart from our invention, the essential requisites of which are the elastic automatically-adjustable ribs or bearers D D', for the reception and support of the vessel E, and the adjustable connection I, for attachment of the trucks B' to the frame A.

It is obvious that by giving the several component parts the proper dimensions and strength, the carriage may be adapted to handle all sizes of water-craft, from a canal-barge to an ocean-steamship.

Having described our invention, what we claim is—

1. In a carriage for transferring vessels, the combination of a system of railway-trucks, B B', a horizontal frame or platform, A, spindles F F', springs *f f'*, and ribs D D', pivoted to the upper ends of the spindles and adapted to automatically adjust themselves in the arc of a circle to conform to the configuration of the hull of the vessel, substantially as described.

2. The combination of a system of railway-trucks, B B', a horizontal platform, A, a series of yielding ribs, D D', capable of automatically adjusting themselves to conform to the hull of a vessel, and elastic connections between the ribs to permit them to move laterally, substantially as described.

3. The combination of the trucks B B', the horizontal platform A, the abutments G, jour-



naled thereon, the spindles F F', supported at the lower ends on the journaled abutments, the springs  $f f'$ , and the ribs D D', pivoted to the upper ends of the spindles and adapted to conform to the configuration of the hull of a vessel, substantially as described.

4. The combination, with ribs D D or D' D', of the spring-barrel H, spring  $h'$ , rod  $h$ , and rod and piston  $h^2$ , substantially as and for the purpose described.

5. The combination, with the ribs D or D' and the frame A of the spindles F or F', springs  $f$  or  $f'$ , and adjustable abutments G, substantially as and for the purpose described.

6. The combination, with the railway-truck B', of the flexible shear or clevis I, and horizontal frame or platform A, arranged and operating substantially as and for the purpose described.

In testimony whereof we have signed our names to the foregoing specification in the presence of two subscribing witnesses.

WILLIAM H. H. HUNTER.  
JERVIS HARGITT.

Witnesses:

JOHN W. HILL,  
OSCAR M. SMITH.