

(No Model.)

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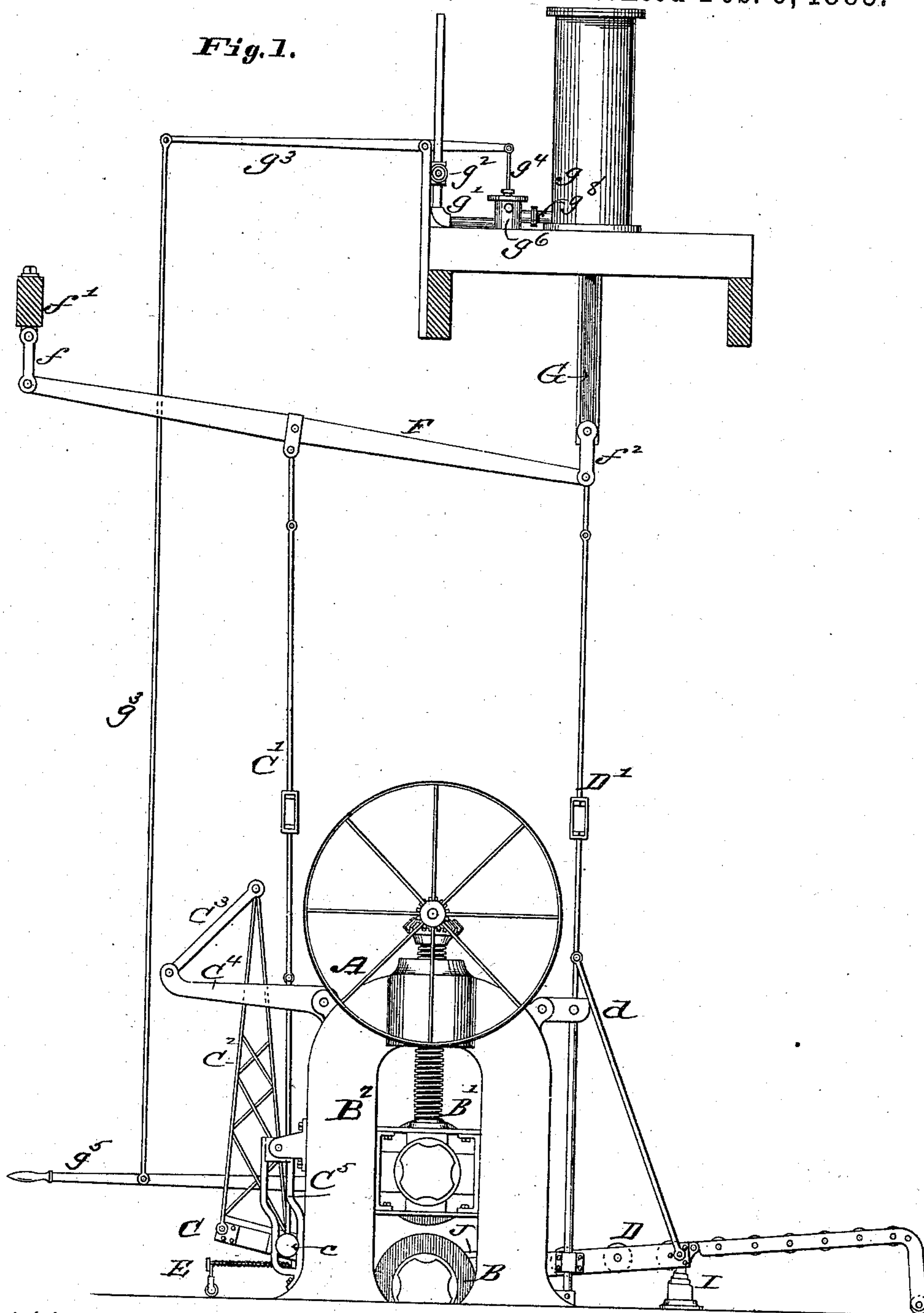
R. BARRETT

LIFT FOR PLATE ROLLING MILLS.

No. 271,766.

Patented Feb. 6, 1883.

Fig. 1.



Attest:

Frank S. Pugh
Charles Pickles

Inventor:

Robert Barrett
by C. D. Moody,
att'y.

(No Model.)

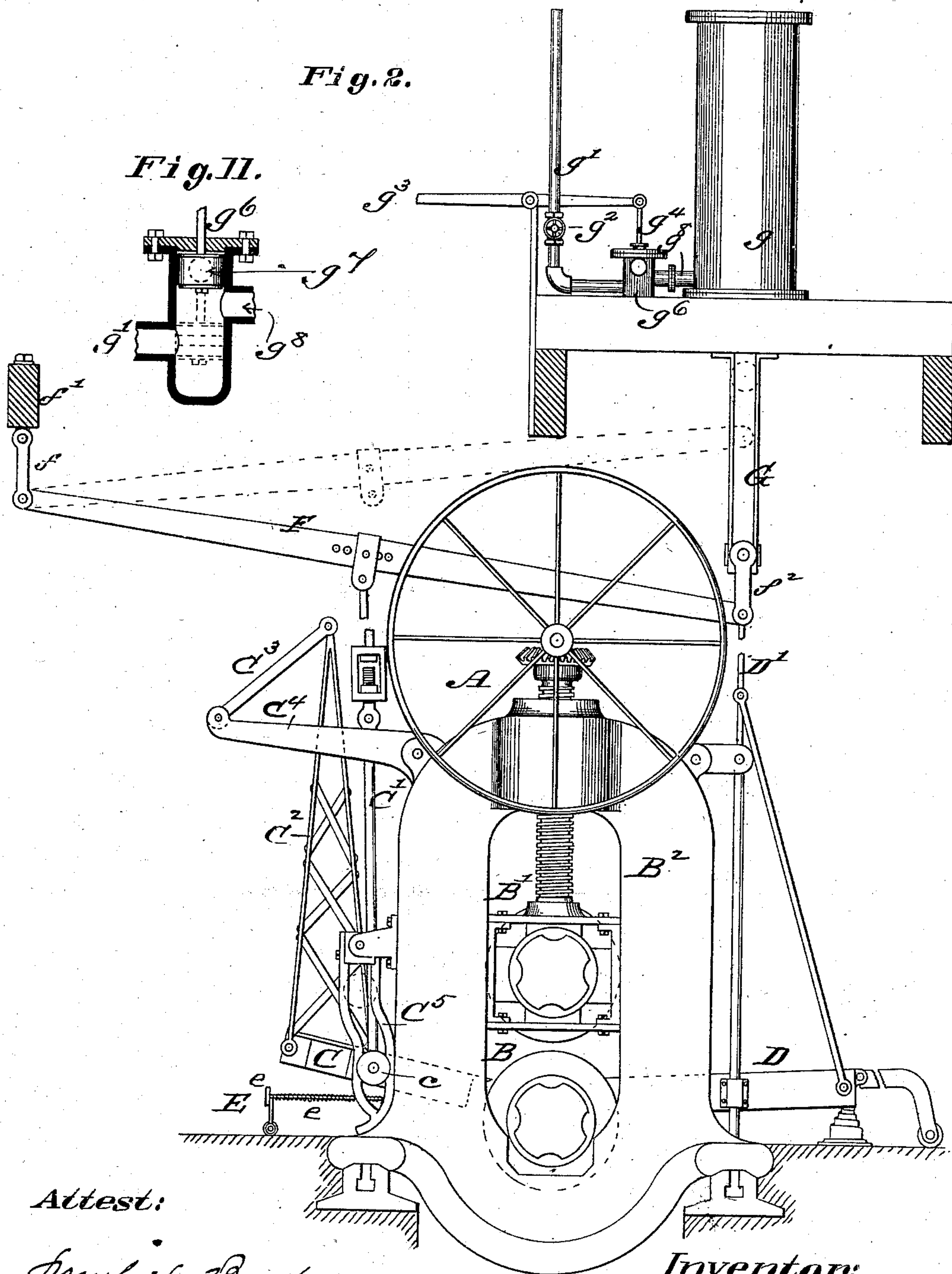
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Patented Feb. 6, 1883.



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Fig. 3.

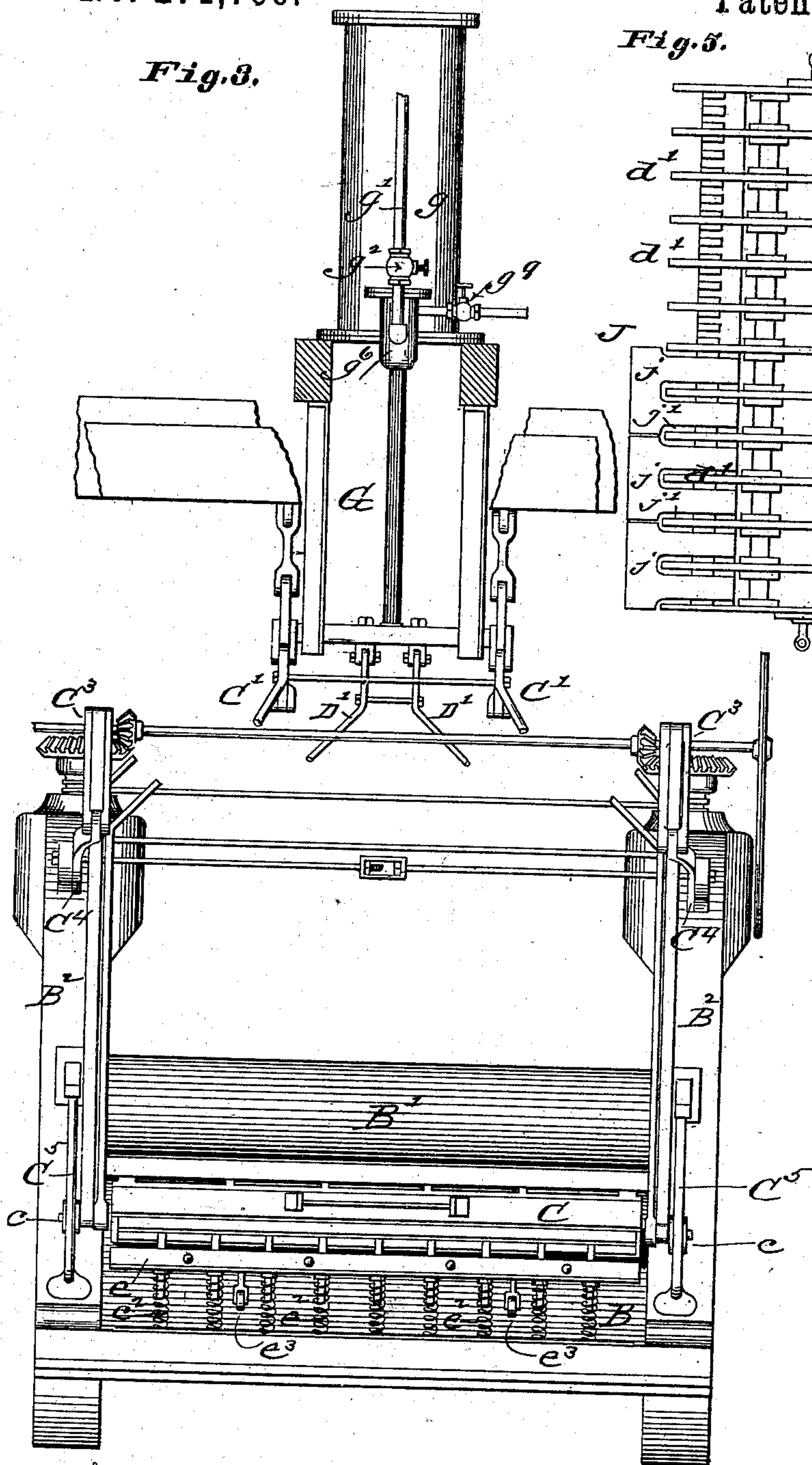


Fig. 5.

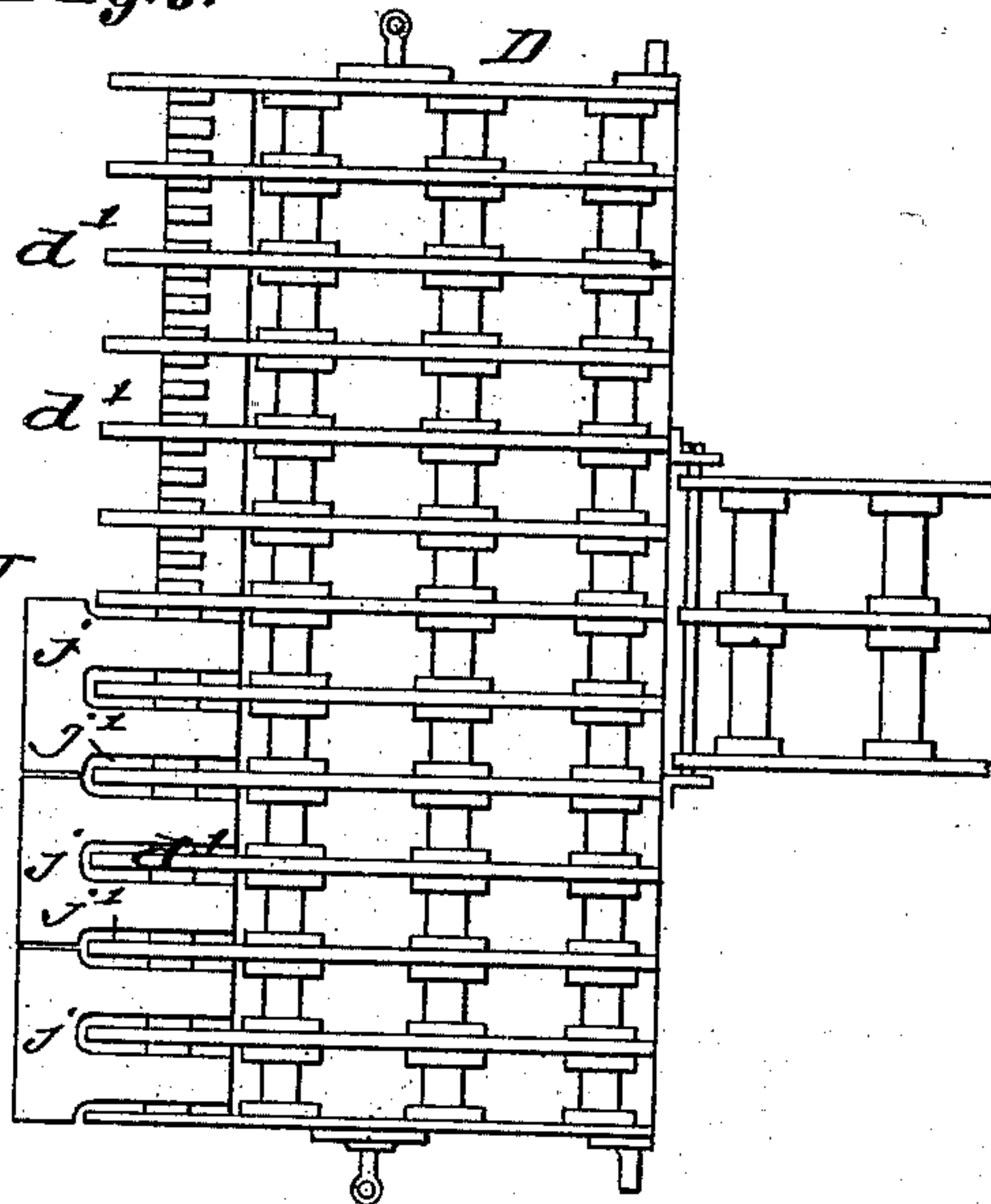
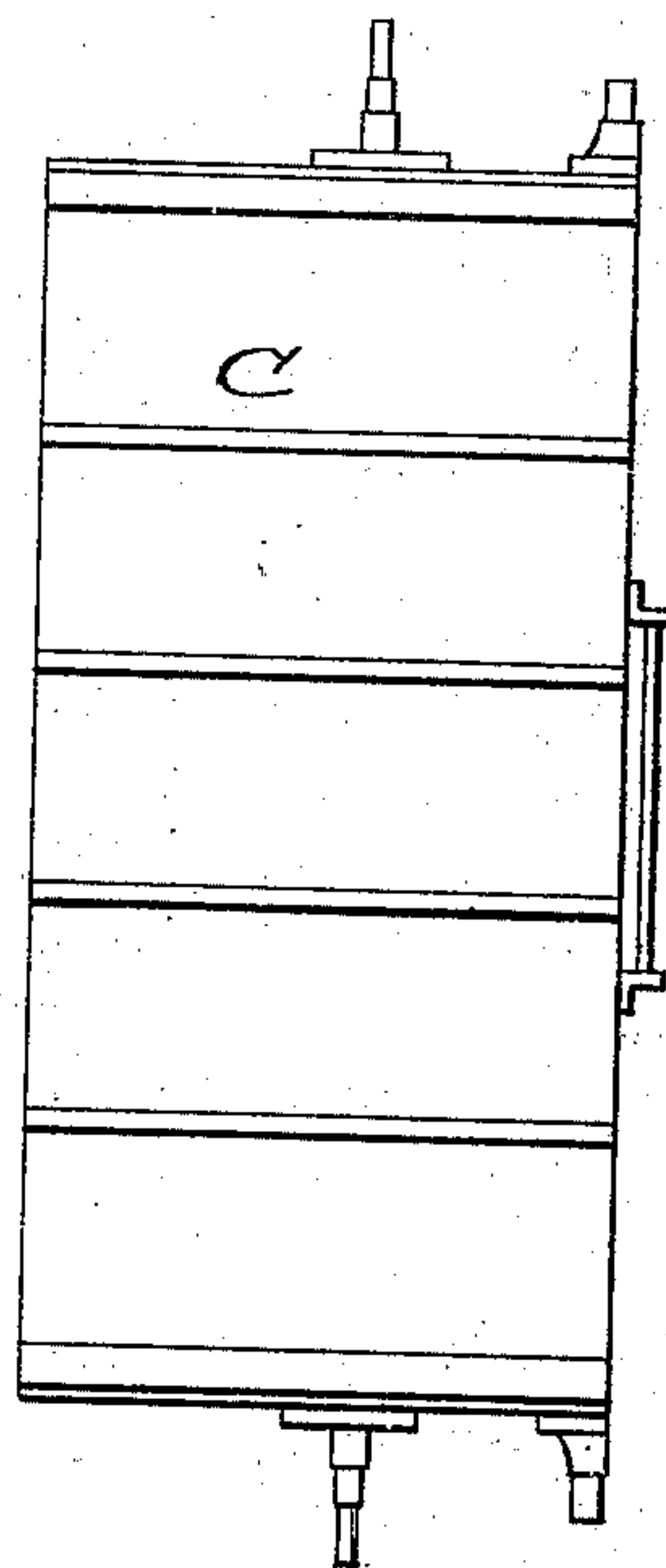


Fig. 4.



(No Model.)

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Fig. 7.

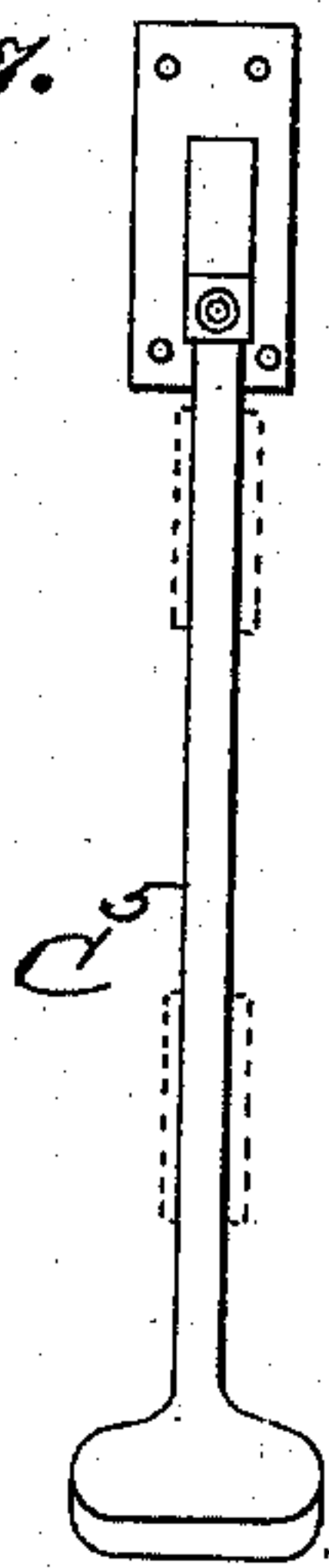


Fig. 8.

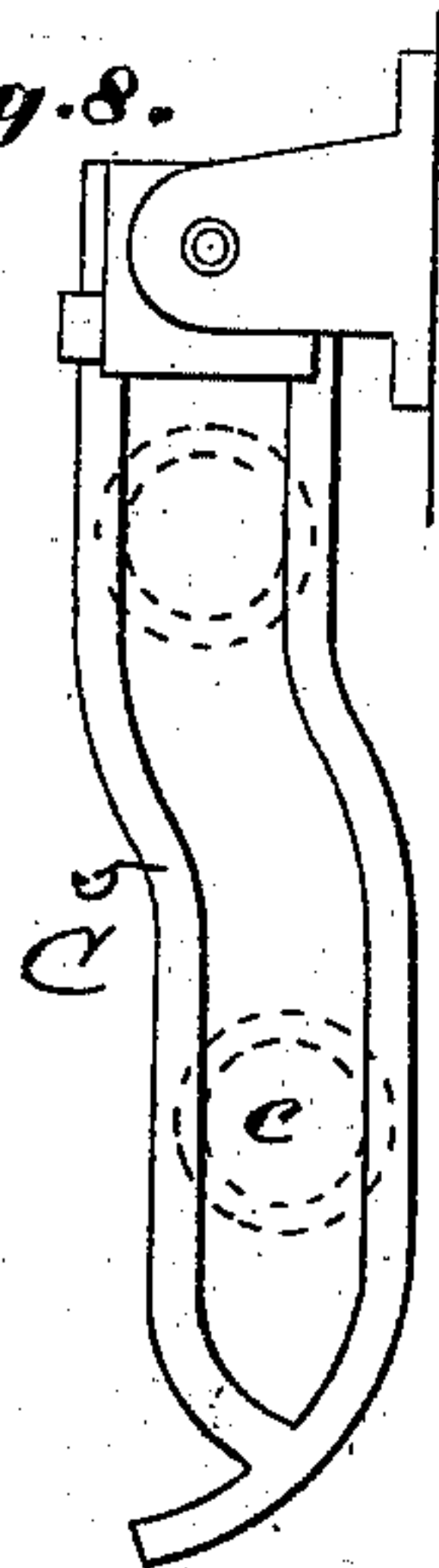


Fig. 9.

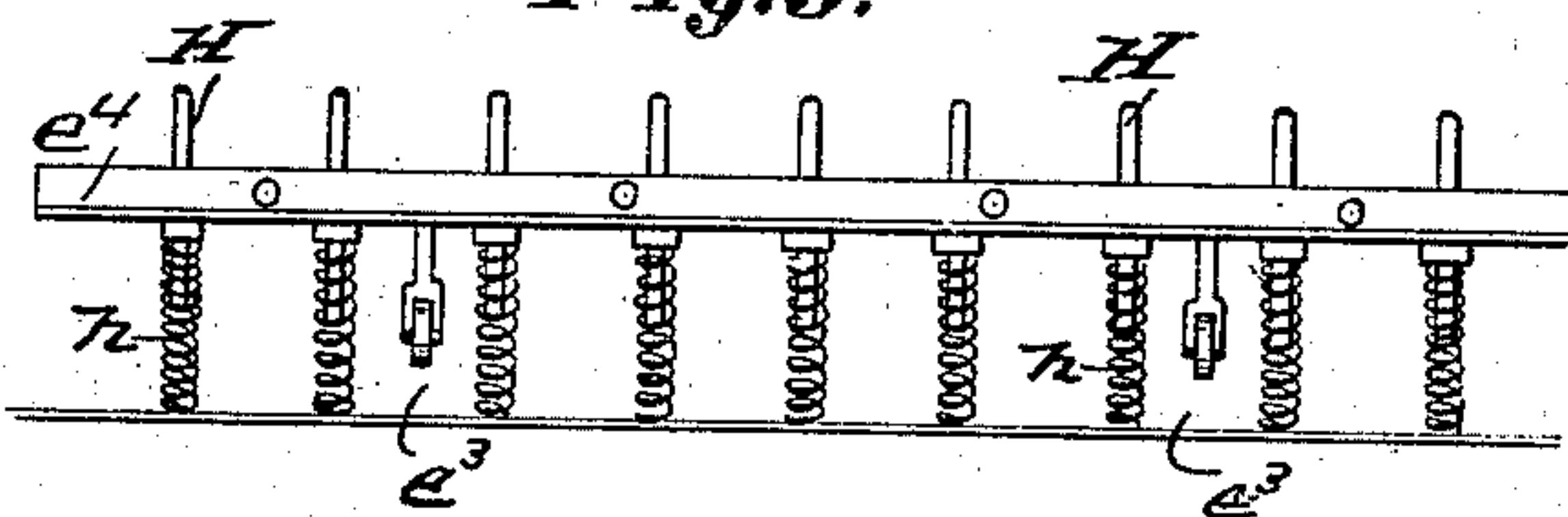


Fig. 10.

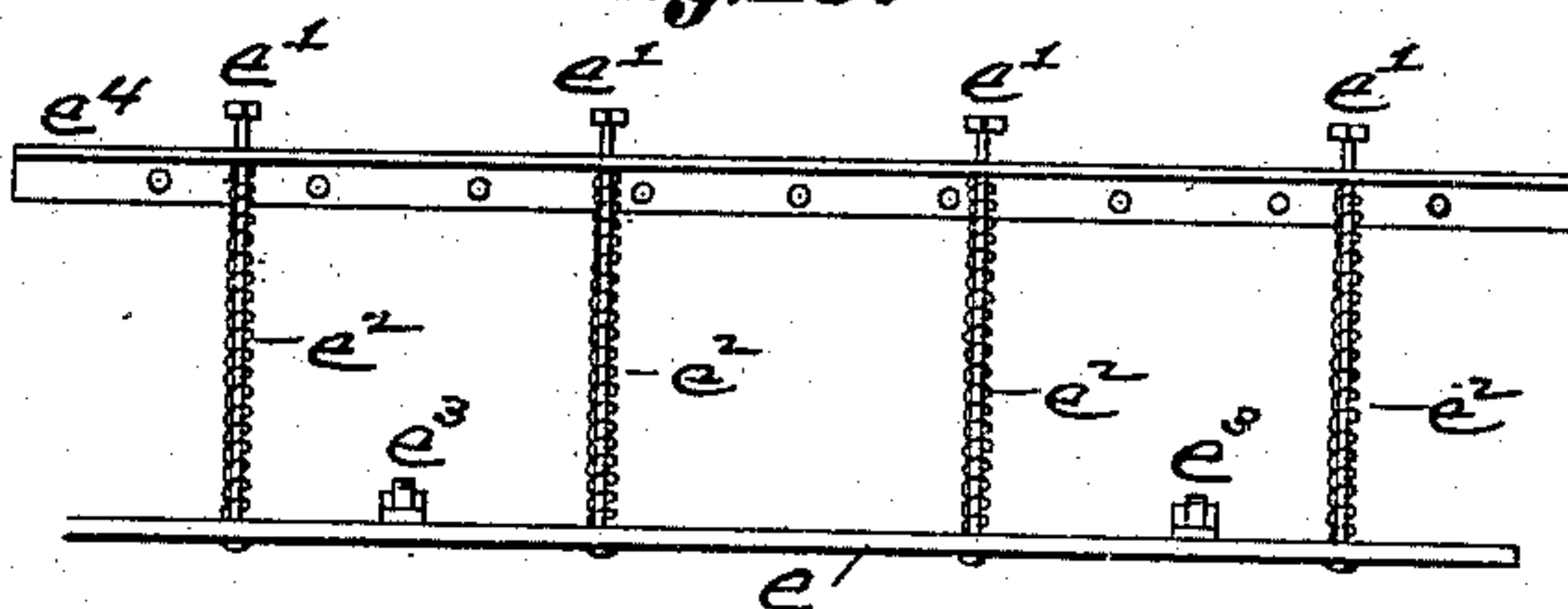
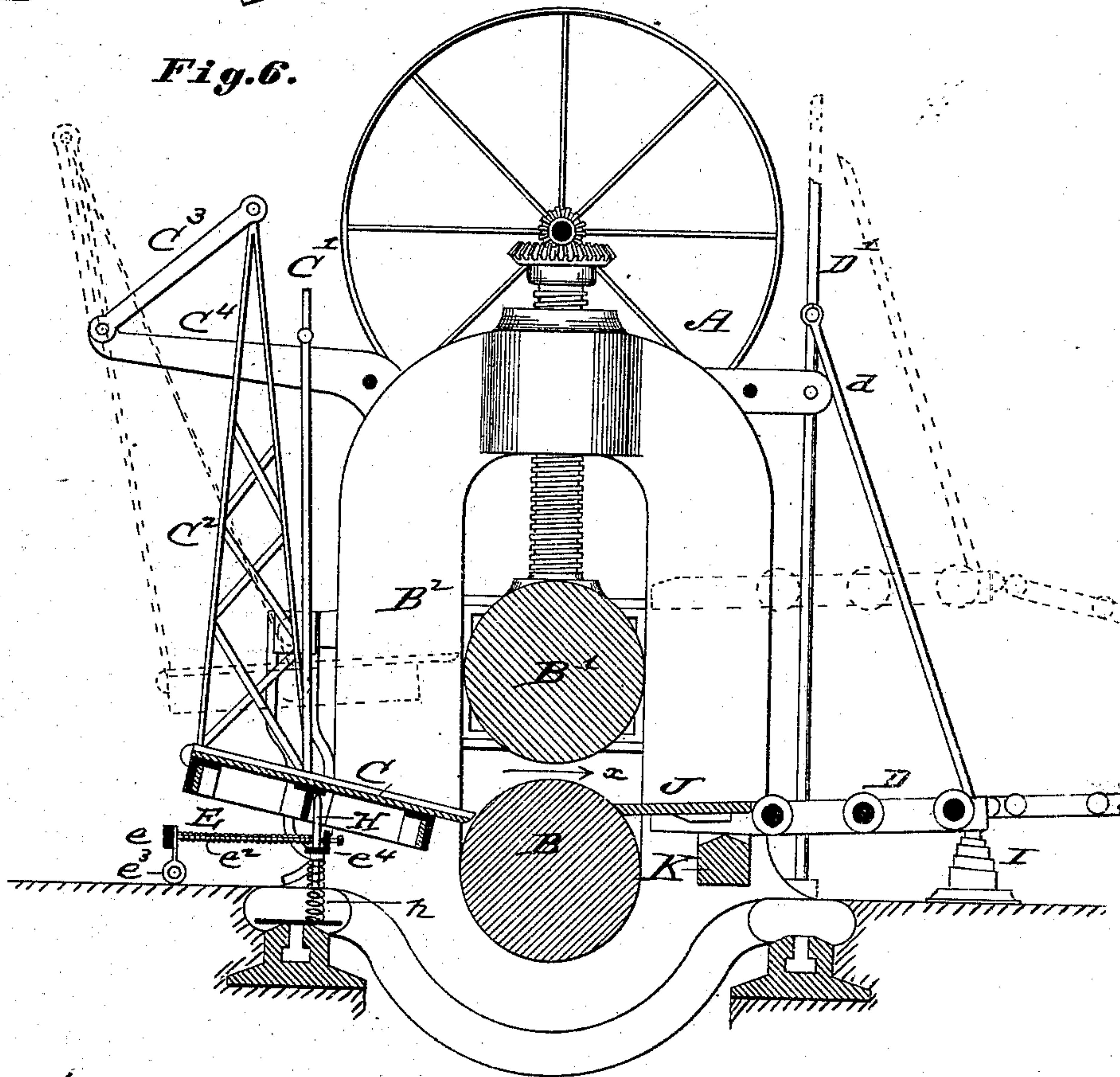


Fig. 6.



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UNITED STATES PATENT OFFICE.

ROBERT BARRETT, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO
PAUL A. FUSZ, OF SAME PLACE.

LIFT FOR PLATE-ROLLING MILLS.

SPECIFICATION forming part of Letters Patent No. 271,766, dated February 6, 1883.

Application filed June 21, 1882. (No model.)

To all whom it may concern:

Be it known that I, ROBERT BARRETT, of St. Louis, Missouri, have made a new and useful Improvement in Lifts for Plate-Rolling Mills, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a side elevation of the improved lift; Fig. 2, another side elevation upon a larger scale, showing the foundation; Fig. 3, a front elevation or view from the roller's side; Fig. 4, a plan of the table on the roller's side; Fig. 5, a plan of the table on the catcher's side; Fig. 6, a vertical longitudinal section of the rolls and lift; Figs. 7 and 8, a front and a side view, respectively, of one of the guides used in directing the movement of the table on the roller's side; Figs. 9 and 10, respectively, a front elevation and a plan of the buffer beneath the table on the roller's side, and Fig. 11 a detail.

The same letters denote the same parts.

The present invention is an improvement in lifts for rolls for rolling iron plates.

The improvement relates to the means for controlling the descent of the lift.

It also has reference to the buffer and cushion on the roller's side of the rolls, to the means for guiding and inclining the roller's table, in its ascent and descent, to the shelf between the lower roll and the catcher's table, and to other details hereinafter specified.

A represents a train of rolls having the improvement in question, and, saving the improvement, the rolls are of the usual description.

B B' represent the rolls, and B² the housing.

C represents the table on the roller's side of the train, being the table from which the plate is delivered into the rolls.

D represents the catcher's table, upon which the plate is received from the rolls. In practice the plate is delivered upon the table C from a truck, the truck being rolled against the buffer E with sufficient momentum to cause the plate to slide from the truck onto the table.

The buffer E is shown in Figs. 1, 2, 3, 6, and

on a larger scale in Figs. 9, 10. It consists mainly of the bar *e*, the rods *e'*, the springs *e*², and the rollers *e*³. As the truck strikes the bar *e*, the springs *e*² yield, and the rods *e'* slip backward through a fixed bar, *e*⁴. The table C, in receiving the plate from the truck, is at the level and in the position shown in the full lines in Figs. 1, 2, 3, 6, being inclined somewhat toward, and nearly or quite, at its forward edge, touching the lower roll, B, and near the top thereof. The plate is passed through the rolls, as indicated by the arrow *x*, Fig. 6, and is received upon the table D. The tables C D are then lifted into the position indicated by the broken lines in Fig. 6, the lifting being effected as follows: The table D is lifted by the rods D' and the table C by means of the rods C'. The rods D' C' at their upper ends connect with the lever F. The lever F, by means of the link *f*, is jointed to the support *f'*, and by means of the link *f*² is connected with the piston-rod G of the cylinder *g*. The steam being admitted into the cylinder, the lever F and tables C D are lifted, as described. The table D, being at the end of the lever F, is lifted higher than the table C. Its movement is directly upward, and it is guided by the bars *d*. The table C is lifted, and also tilted slightly outward from the upper roll, B', and in passing the bulge of the upper roll the table must be withdrawn from that roll sufficiently to clear it. These last two named movements are effected as follows: The arms C² C³, which are rigidly connected with the table, are at their upper ends jointed to links C³, which in turn are jointed to arms C⁴. The last-named parts are fixtures upon the housing B². As the table C rises, the links C³ and arms C⁴ operate to tilt the table into the position indicated by the broken lines in Fig. 6, and the guides C⁵ (the table C has projections *c* engaging in the guides C⁵) operate, by reason of this peculiar shape, as shown, to direct the table backward from the roll B' sufficiently to enable the table to pass the roll. The table C, when lifted, is preferably just above the center of the upper roll. The guides C⁵ are attached to the housing B². The plate, being elevated upon the table D to the level of the top of the roll B', is passed backward over

the roll B' onto the table C again, and the lift is ready to be lowered. This is effected by exhausting the steam from the cylinder *g*. The movement of the lift, both in its upward and in its downward movement, I have ascertained, should not in practice be wholly within the control of the person tending the rolls. When such is the case the lift is apt to be lifted and lowered too suddenly. Accordingly, in the present construction, means have been devised for checking the movement of the lift, so that it shall not take place above a certain rate, which means are independent of the mechanism employed by the tender in operating the lift, as follows: *g*⁹ is a throttle-valve in the pipe, through which the steam is supplied to the cylinder *g*. By suitably setting this valve the amount of steam supplied to the cylinder is limited. The steam-supply pipe does not pass directly to the cylinder *g*, but enters a valve-chamber, *g*⁶, and thence, through the pipe *g*⁸, Figs. 2, 11, passes to the cylinder *g*. The steam is exhausted from the cylinder *g* through the pipe *g*⁸, the chamber *g*⁶, and the pipe *g*⁷.

A valve, *g*⁷, in the chamber *g*⁶ is used to determine the movement of the steam to and from the cylinder *g*. When the valve is in the position shown in the full lines in Fig. 11 the steam exhausts from the cylinder *g*, and when in the position indicated by the broken lines in Fig. 11, the exhaust-pipe *g*⁷ is closed and the live steam is being admitted through the chamber *g*⁶ and pipe *g*⁸ to the cylinder *g*. The valve *g*⁷ is provided with the stem *g*⁴, and a connection, *g*³, leads from the valve-stem *g*⁴ to the lever *g*⁵, which is within reach of the roll's tender, and by suitably moving the lever *g*⁵ the steam is admitted to and discharged from the cylinder and the lift raised and lowered. The throttle *g*⁹, however, as stated, prevents the steam from being admitted too freely to the cylinder, and by means of a valve, *g*², in the exhaust-pipe *g*⁷, which in practice is adjusted similarly to the valve *g*⁹, the exhaust is cramped and the steam prevented from exhausting too freely from the cylinder.

The fall of the lift is cushioned by means of the rods H and the springs I, the table C countering the rods H and the table D the springs I. The rods H work upward and downward through the bar *e*⁴. Underneath this bar the rods bear upon springs *h h*, and are thus elastically upheld.

A guide, J, preferably made in sections *j j*, is interposed between the roll B and the table D. The guide serves to direct the plate properly onto the table D. The guide has open-

ings *j' j'* to admit the bars *d' d'* of the table. The table, when lowered to receive the plate, must not be above the level of the guide. The guide is supported by the rest K.

The present improvement, while well adapted to trains for rolling plate-iron, can be used in connection with many other forms of iron, as well as for trains for other metals.

I claim—

1. The combination of a train-lift, a steam or other cylinder for operating the lift, and means for controlling the admission of the steam into the cylinder, consisting of a supply-pipe provided with a valve, *g*⁹, chamber *g*⁶, pipe *g*⁸, and cylinder *g*, substantially as described.

2. The combination of a train-lift, a steam or other cylinder for operating the lift, and means for controlling the escape of the exhaust from the cylinder, consisting of the cylinder *g*, pipe *g*⁸, chamber *g*⁶, pipe *g*⁷, and valve *g*², for the purpose described.

3. The combination of the lift herein described, the cylinder *g*, the exhaust-pipe *g*⁷, the valves *g*² *g*⁷, supply-pipe and valve *g*⁹, the connection *g*³, and the lever *g*⁵, substantially as described.

4. The buffer E, as and for the purpose described.

5. The combination of the buffer E and the table C, substantially as described.

6. The combination of the table C and the elastically-supported rods H, substantially as described.

7. The combination of the rolls B B', the housing B², the guides C⁵, of the peculiar shape shown, and the table C, substantially as described.

8. The combination of the rolls B B', the housing B², the table C, the rods C', the arms C², the links C³, and the arms C⁴, substantially as described.

9. The combination of the rolls B B', the table C, the rods C', the arms C², the links C³, the arms C⁴, and the guides C⁵, substantially as described.

10. The combination of the rolls B B', the tables C D, the rods C' D', the arms C², the links C³, the arms C⁴, the guides C⁵, the lever F, and the piston-rod G, substantially as described.

11. The combination of the roll B', the shelf J, having the openings *j'*, and the table D, substantially as described.

ROBERT BARRETT.

Witnesses:

C. D. MOODY,
PAUL A. FUSZ.