

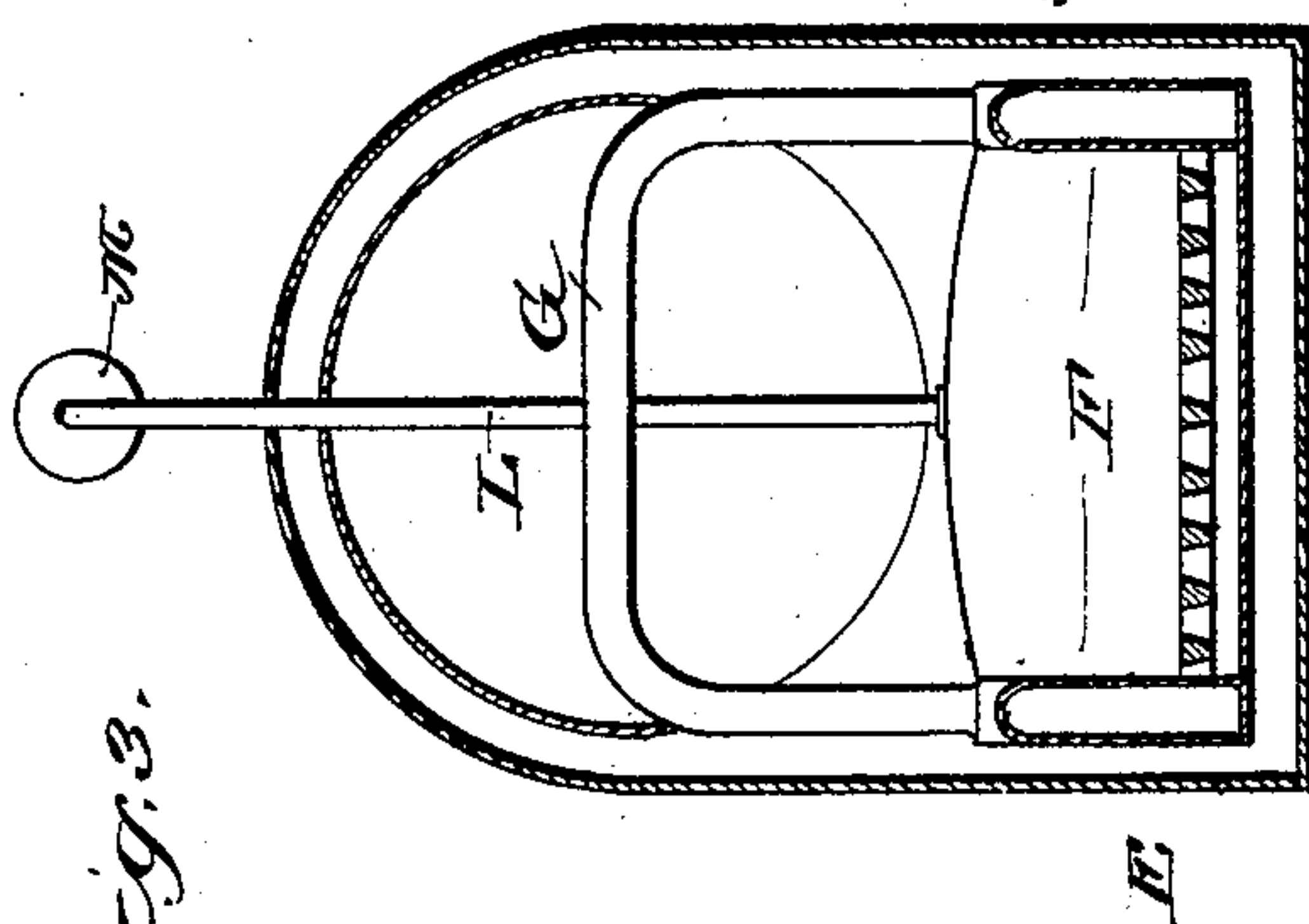
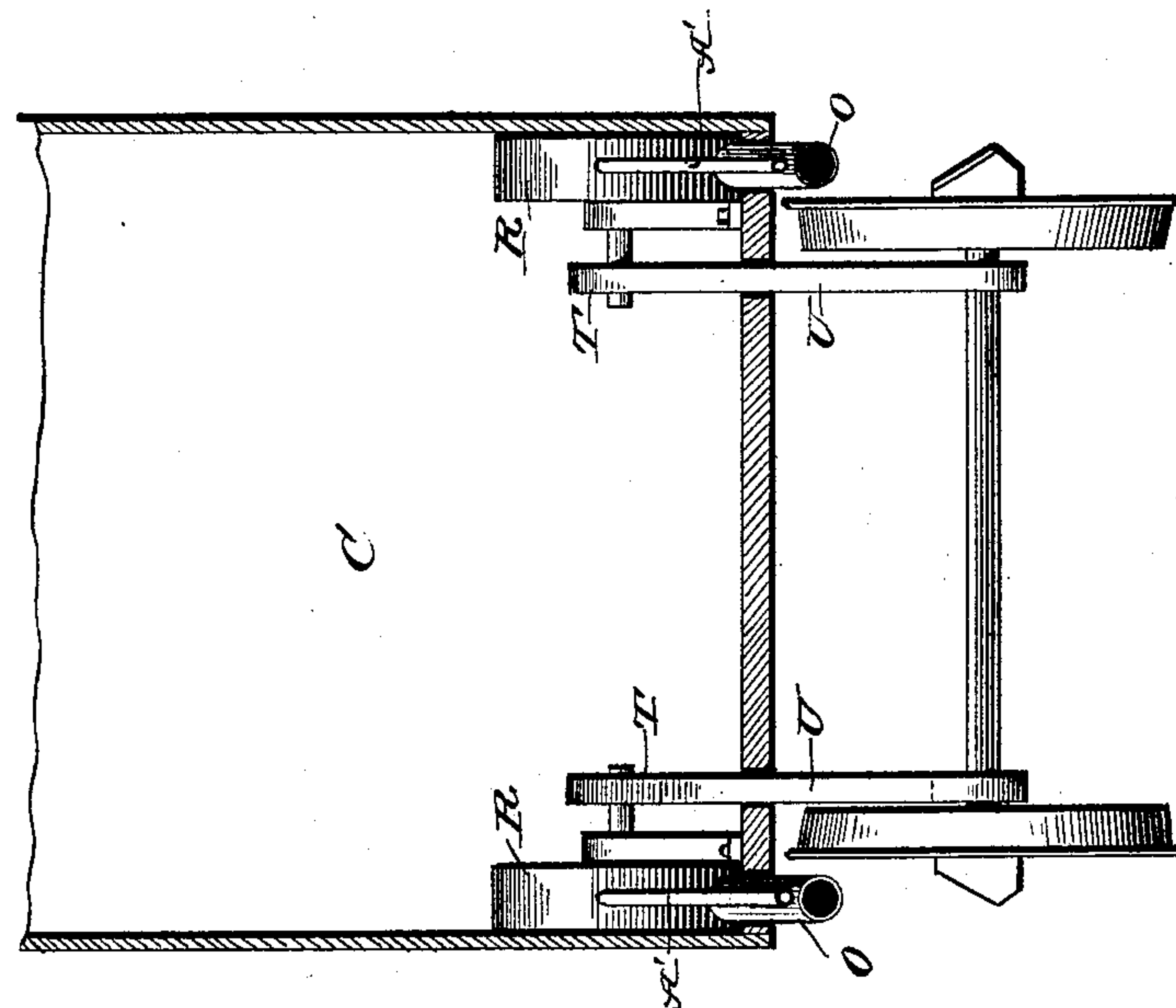
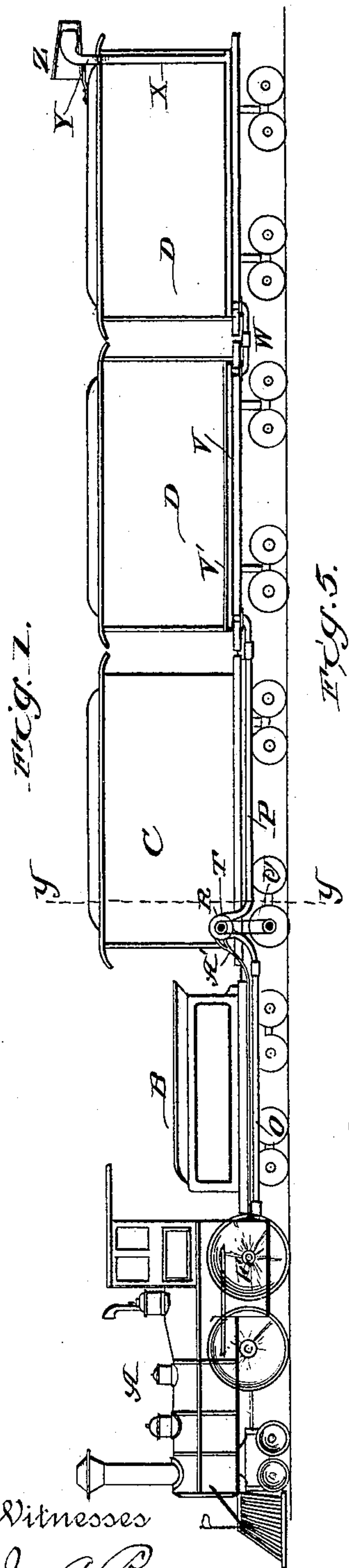
(No Model.)

2 Sheets—Sheet 1.

E. COLLINS.
CAR HEATER.

No. 390,649.

Patented Oct. 9, 1888.



Witnesses
Jos. A. Ryan
J. W. Garner

Inventor
E. Collins.

By his Attorneys
C. A. Snowdon

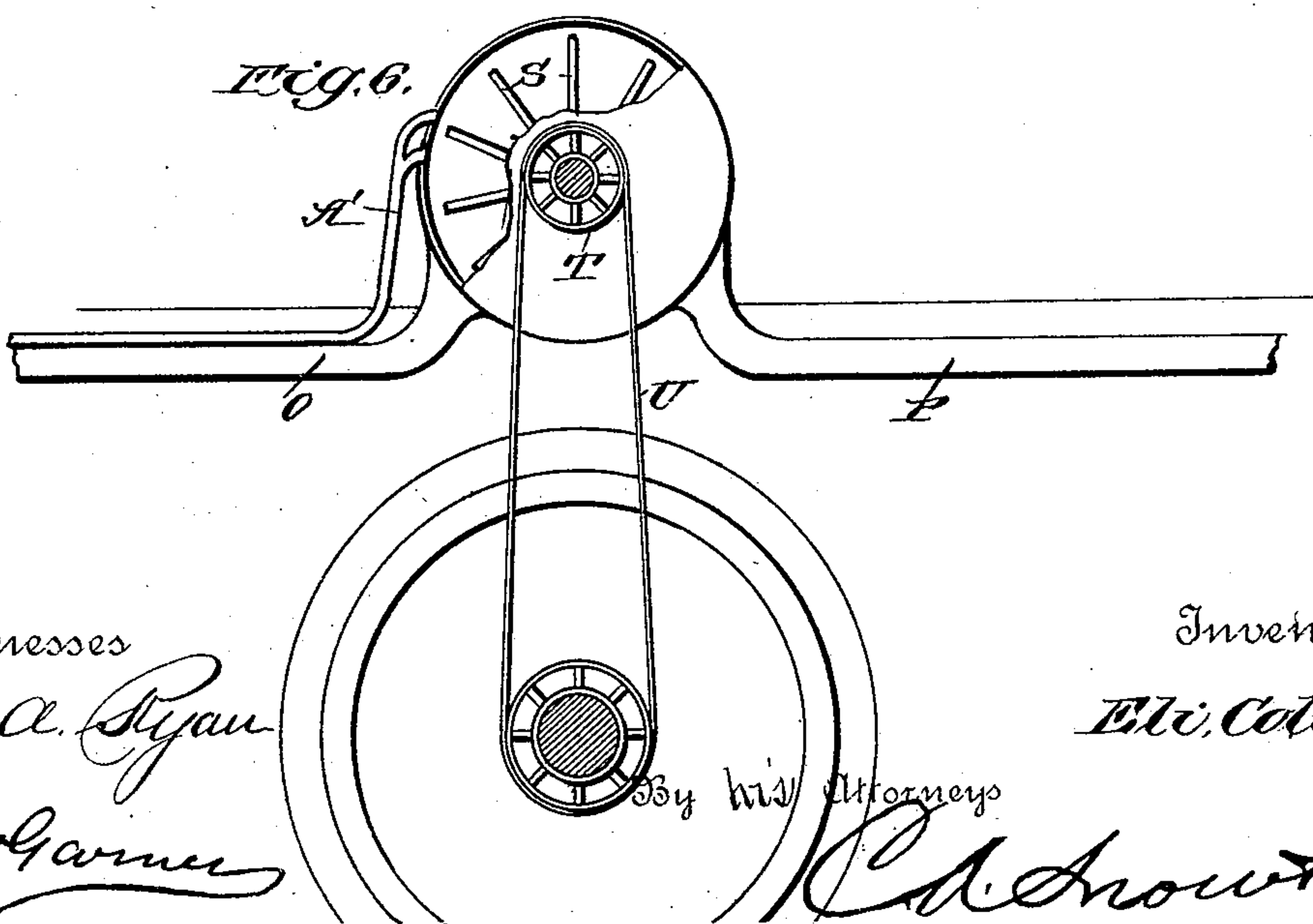
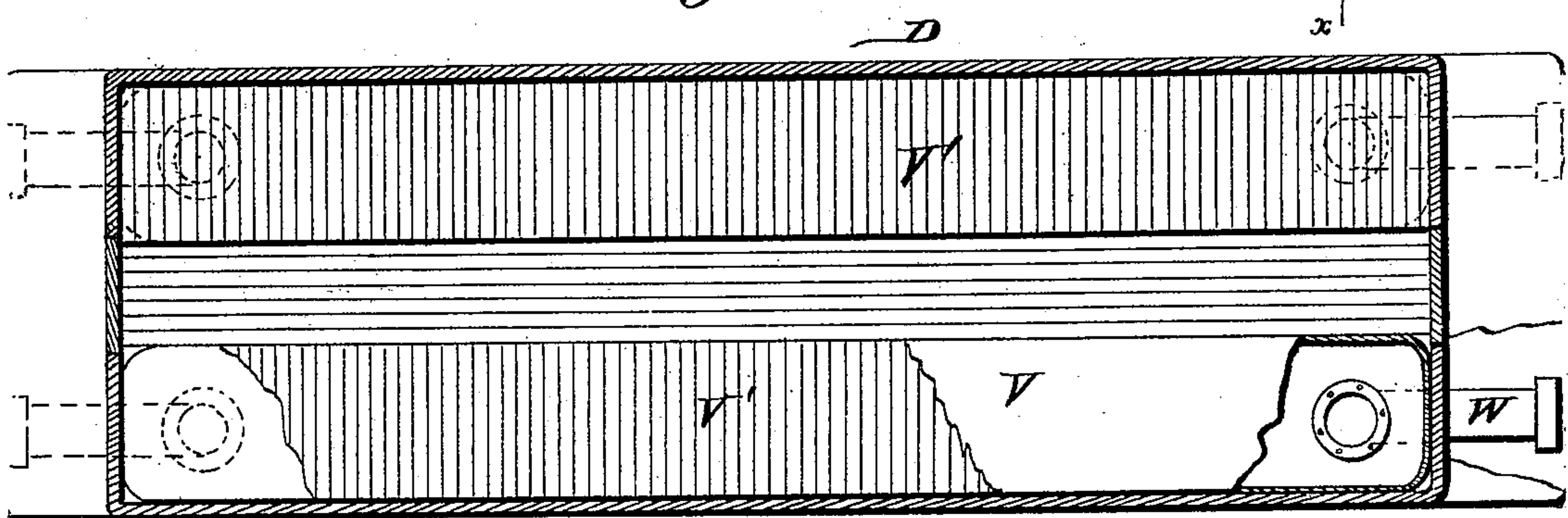
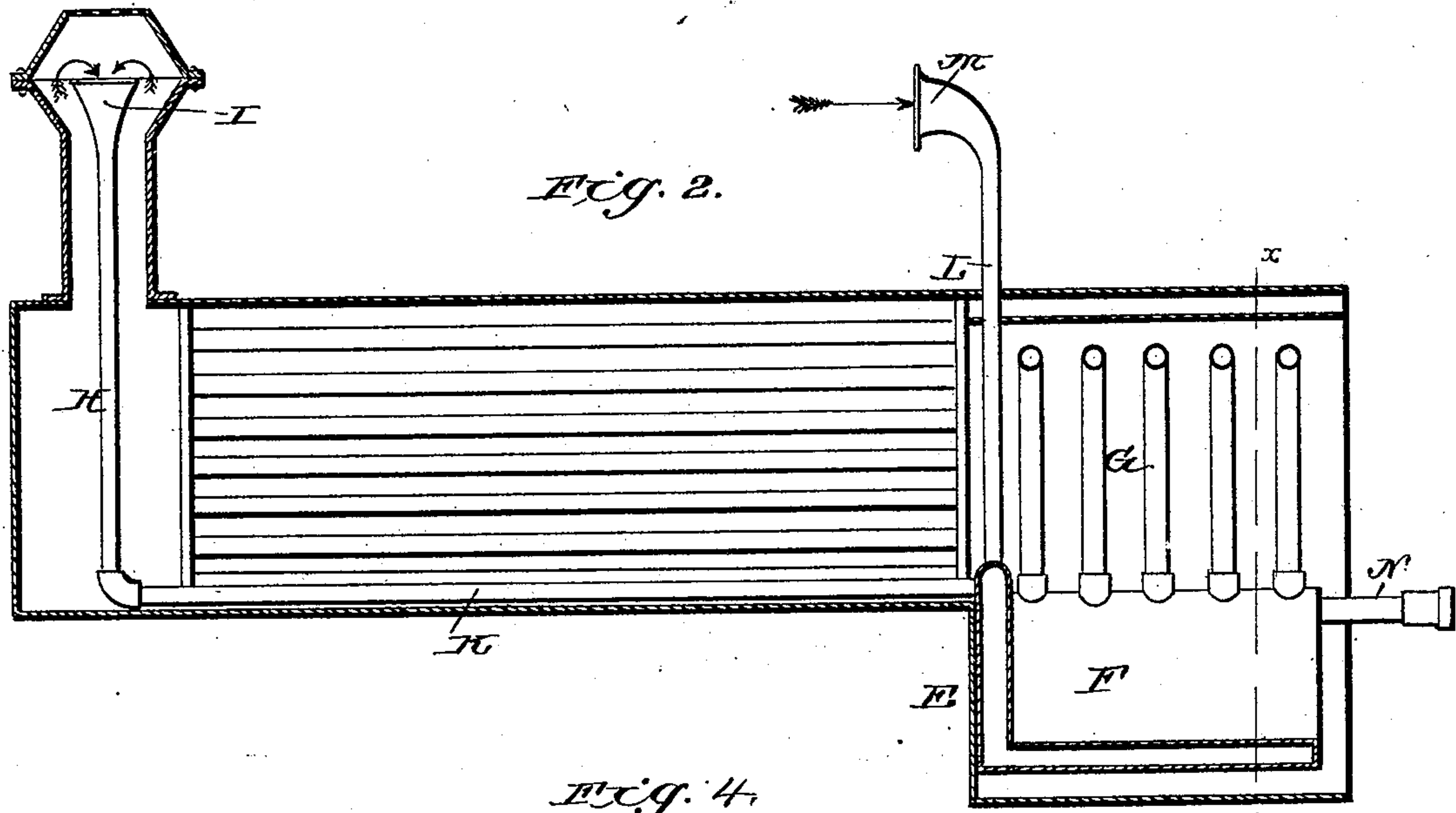
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UNITED STATES PATENT OFFICE.

ELI COLLINS, OF LITTLE ROCK, ARKANSAS.

CAR-HEATER.

SPECIFICATION forming part of Letters Patent No. 390,649, dated October 9, 1888.

Application filed July 12, 1887. Serial No. 244,103. (No model.)

To all whom it may concern:

Be it known that I, ELI COLLINS, a citizen of the United States, residing at Little Rock, in the county of Pulaski and State of Arkansas, have invented a new and useful Improvement in Car-Heaters, of which the following is a specification.

My invention is an improvement in car-heaters; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation, partly in section, of a railway-train provided with heating apparatus embodying my improvements. Fig. 2 is an enlarged longitudinal sectional view of the locomotive-boiler provided with my improved air-heating devices. Fig. 3 is a vertical transverse sectional view of the same, taken on the line *xx* of Fig. 2. Fig. 4 is a plan view of one of the railway-cars provided with my heating apparatus with parts removed. Fig. 5 is a transverse sectional view on the line *yy* of Fig. 1. Fig. 6 is a detail view of one of the blowers.

A represents the locomotive.

B represents the tender.

C represents the baggage-car, and D represents the passenger-coaches.

In the bottom of the fire-box E of the locomotive-boiler is located a heating-chamber, F, provided on its upper side with a series of transversed arched pipes G.

H represents a vertical pipe which is arranged in the smoke-stack of the locomotive and extends downward in the smoke-box thereof. The upper end of this pipe is provided with a funnel, I, which is arranged at a slight distance below the upper end of the smoke-stack. To the lower end of the pipe H is connected the horizontal pipe K, which extends rearward through the boiler of the locomotive and is connected to the front end of the heating-chamber F.

L represents a vertical pipe which extends from the front side of the heating-chamber directly up through and beyond the fire-box of the locomotive, and has its upper end curved forward and provided with a bell-shaped induction-funnel, M.

From the rear end of the heating-chamber F, at the sides thereof, project rearward-extending pipes N, which are coupled to pipes O, that are arranged under the tender. The said pipes O are coupled to pipes P, which extend longitudinally under the baggage-car, and communicating with the said pipes P on opposite sides of the baggage-car are circular cases R, in which are journaled fans or blowers S. The inner ends of the shafts of the said fans or blowers are provided with band-pulleys T, which are connected to similar band-pulleys on one of the axles of the baggage car by means of endless belts U.

On the floor of each passenger coach D is arranged a pair of hot-air chambers, V, which extend throughout the length of the coaches and are coupled to the pipes P, the passenger-coaches having their hot-air chambers coupled together by means of couplings W. The upper sides of the hot-air chambers are covered by thin flooring at *v'*. At the rear end of the rear passenger-coach are vertical pipes X, which extend upward from the rear ends of the air-chambers and communicate with a vertical union-pipe, Y, which extends above the roof of the rear coach at the rear end thereof. The upper end of the said union-pipe is curved rearwardly, as shown.

Z represents an eduction-cone, which is secured on the roof of the rear coach at the rear end thereof, and surrounds the upper end of the pipe Y, the front end of the said cone being larger than the rear end thereof. The upper end of the locomotive smoke-stack is covered by a perforated plate, *a*.

The operation of my invention is as follows: When the train is in motion, the exhaust-steam from the engines and the products of combustion and hot air from the locomotive fire-box pass upward through the smoke-stack in the usual manner. The perforated plate *a* at the upper end of the smoke-stack prevents the free escape of the steam, products of combustion, and heated air, and a portion thereof is drawn downward through the pipes H and K and supplied to the heating-chamber F, circulates through the same and through the arched pipes G, where it becomes intensely heated, and from this passes rearward through the pipes O into the cases R of the fans or blowers. Rotation is

communicated to the latter by the endless belts, which connect their pulleys to pulleys on one of the shafts or axles of the car, and the said fans or blowers force the hot air and products rearward through the pipes P and through the chambers V in the coaches throughout the entire train. The said chambers V warm the interior of the coaches by radiation, as will be readily understood, and from the same the hot air and products escape through the pipes X into the union-pipe Y and out therefrom into the outer air. The function of the cone Z is to direct a current of air rearward over the discharge end of the pipe Y when the train is advancing, thereby causing the suction, which tends to create a partial vacuum in the said pipe Y, and consequently facilitates the escape of the hot air and products therefrom, and also assists in maintaining a circulation of air from the heating apparatus.

In order to keep the apparatus at work when the train is not in motion, I provide steam-pipes A', which extend from the locomotive-boiler to the cases R, and are adapted to direct jets of steam against the blades of the fans of blowers, and thereby cause the same to be rotated, as will be very readily understood.

In order that the fans S may operate when the train is not in motion, some means must be provided for temporarily disconnecting them from the axle of the car. This may be accomplished by providing loose pulleys on the fan-shafts, on which the belts U may be shifted from the pulleys T, or by having the pulleys T loose on the fan shafts and providing clutches to engage the said pulleys and secure them to the fan-shafts when the train is in motion. Various other means may be em-

ployed to accomplish this result, such as will readily suggest themselves to any skilled mechanic, and I do not limit myself in this particular.

The eduction-pipe L is supplementary to the pipes H and K as a means for supplying air to the heating-chamber F in the locomotive fire-box, and in some instances may be employed in lieu of the said pipes H and K.

Having thus described my invention, I claim—

1. A locomotive having the heating-chamber F arranged in the fire-box, the smoke-stack having the perforated plate *a* at its upper end, and the pipes communicating with the chamber F and extending upward in the smoke-stack, substantially as described.

2. The locomotive having the chamber F arranged in the lower side of the fire-box and provided with the arched pipes G, the eduction pipe N, communicating with said chamber, for the purpose set forth, the smoke-stack having the perforated plate *a* in its upper end, and the induction pipes communicating with the chamber F and extending up in the smoke-stack, substantially as described.

3. The locomotive having the heating-chamber F in its fire-box, the pipe L, communicating with the outer air and with said chamber, and the pipes communicating with said chamber and extending upward in the smoke-stack, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

ELI COLLINS.

Witnesses:

ALBERT COHEN,
WILL HENNIGER.