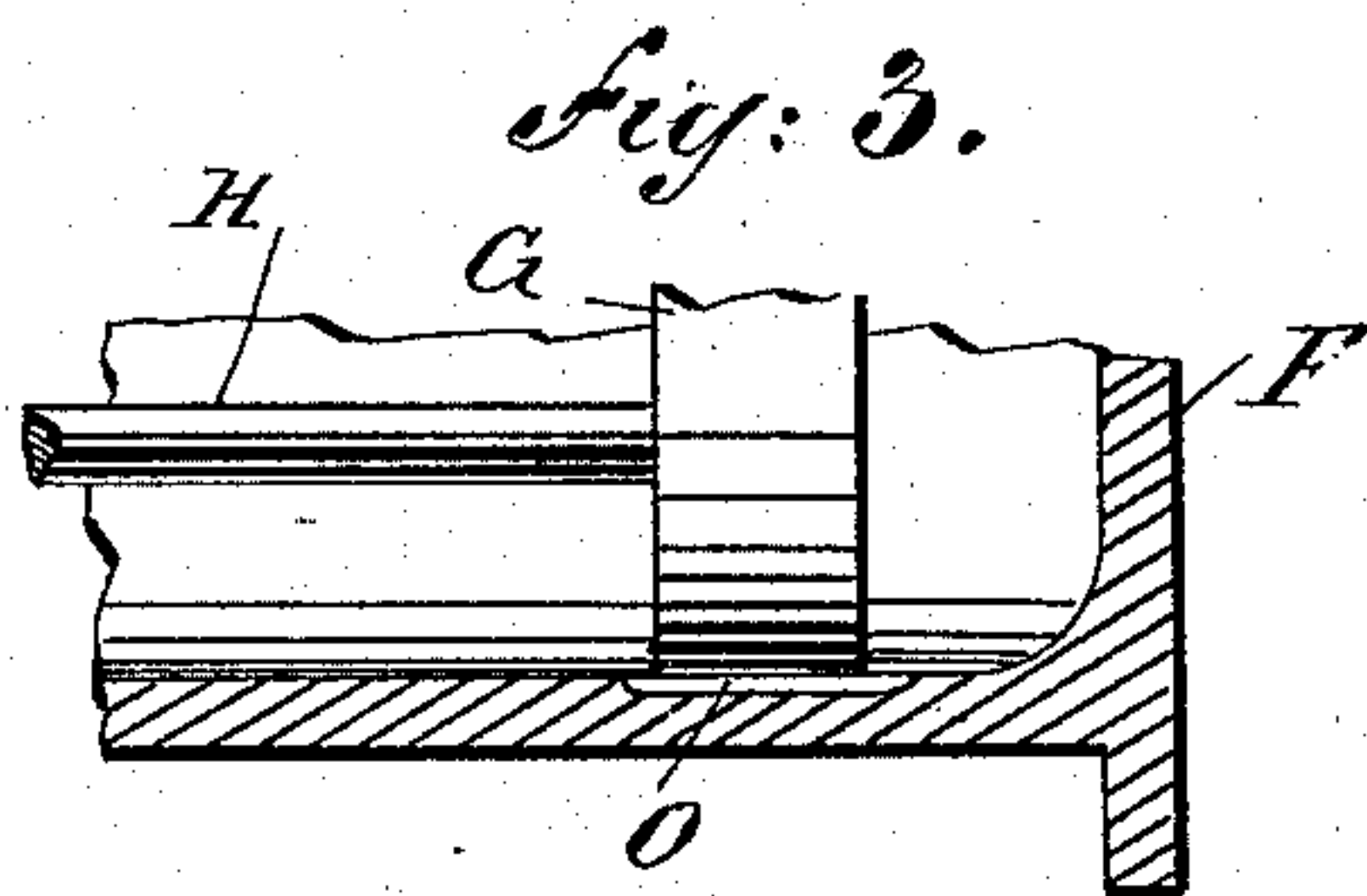
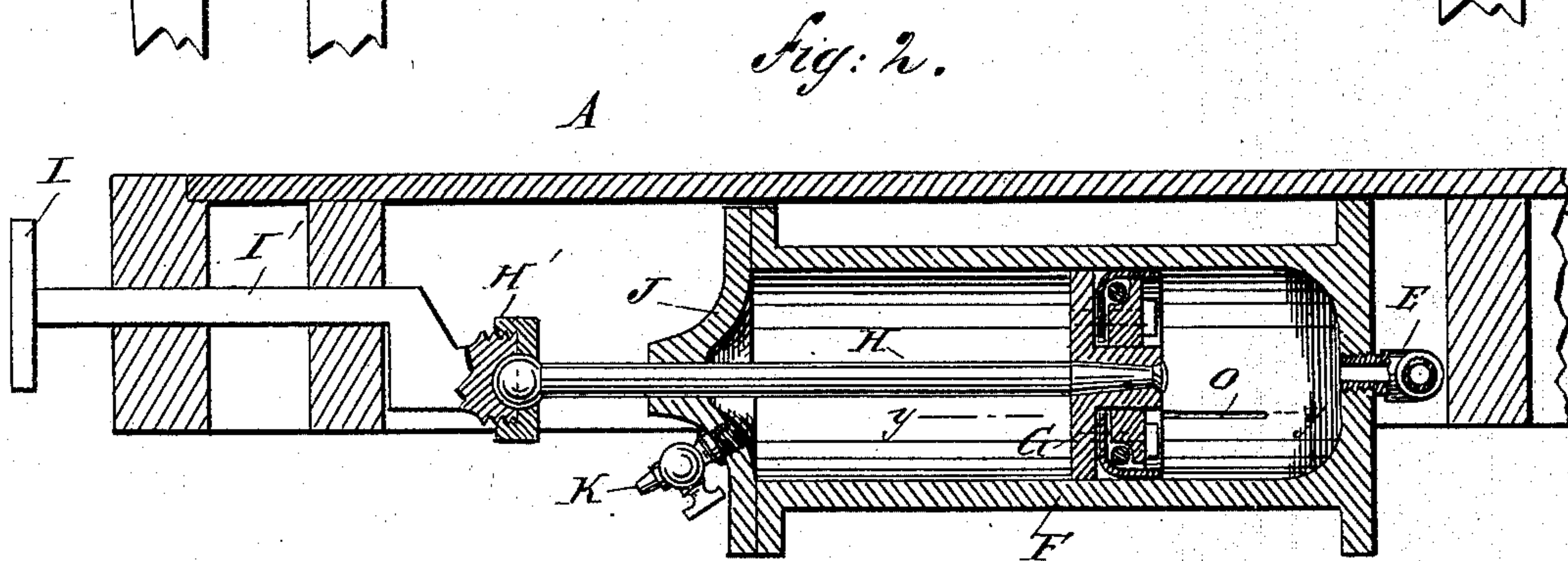
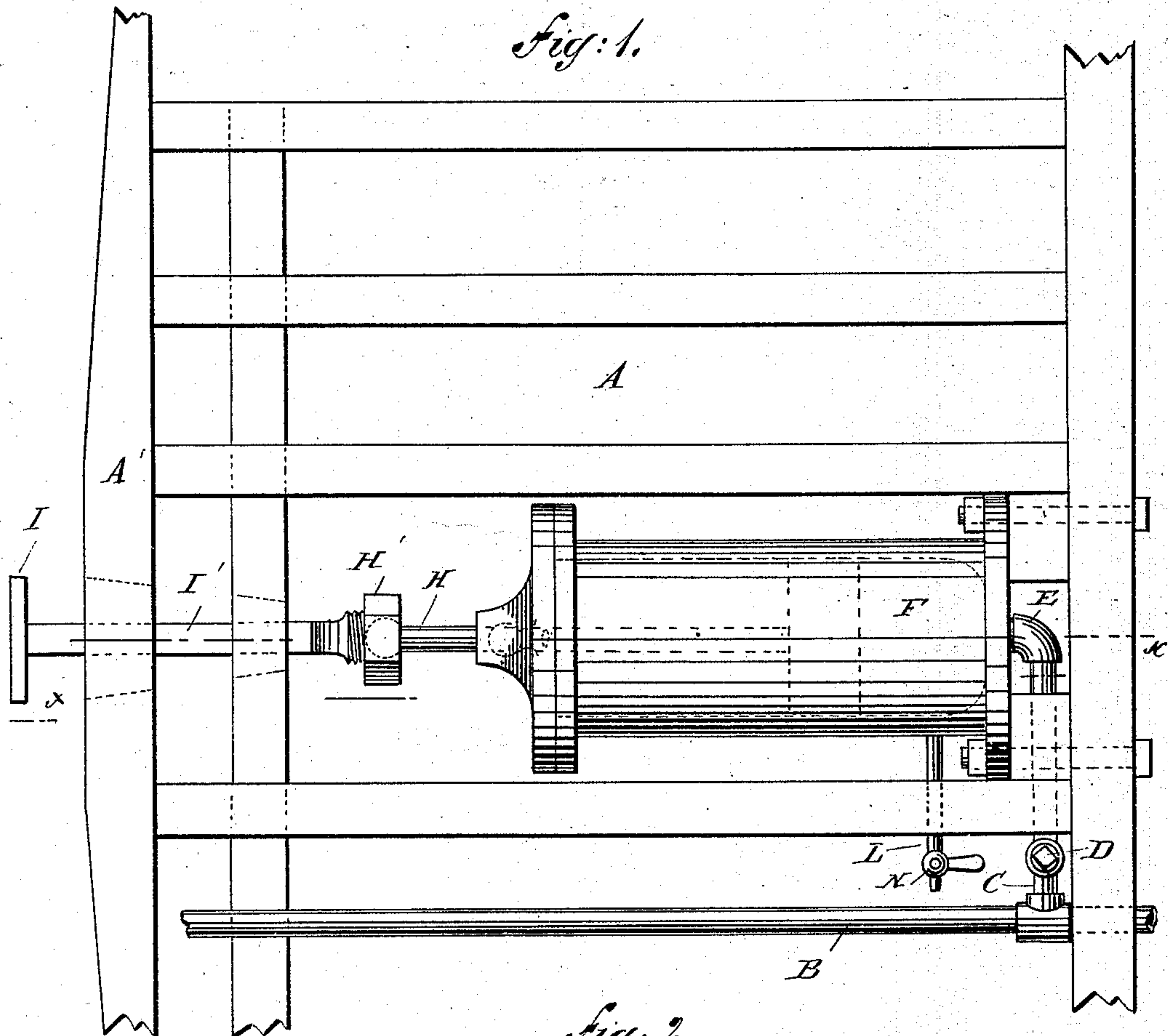


(No Model.)

F. S. WAY.
CAR BUFFER.

No. 413,423.

Patented Oct. 22, 1889.



WITNESSES:

Chas. Nida.
C. Sedgwick

INVENTOR:

F. S. Way
BY *Munn & Co.*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

FRANK S. WAY, OF MOUNT VERNON, ILLINOIS, ASSIGNOR TO HIMSELF AND
GEORGE B. LEONARD, OF SAME PLACE.

CAR-BUFFER.

SPECIFICATION forming part of Letters Patent No. 413,423, dated October 22, 1889.

Application filed April 17, 1889. Serial No. 307,595. (No model.)

To all whom it may concern:

Be it known that I, FRANK S. WAY, of Mount Vernon, in the county of Jefferson and State of Illinois, have invented a new and Improved Car-Buffer, of which the following is a full, clear, and exact description:

The object of the invention is to provide a new and improved car-buffer which is simple and durable in construction, very effective in operation, adapted to prevent all slack of the draw-bars between the cars, and also adapted to receive all jar incident to the motion of the train.

My invention is an improvement in the class of pneumatic car-buffers, and includes certain novel features of construction, arrangement, and combination of parts, as hereinafter described and claimed.

Figure 1 is an inverted plan view of the improvement as applied. Fig. 2 is a longitudinal section of the same on the line $x x$ of Fig. 1. Fig. 3 is a sectional plan view of part of the cylinder on the line $y y$ of Fig. 2.

The improved car-buffer is located in the middle of the under side of the car-platform A. An air-pipe B, extending under the car and charged with compressed air under the control of the engineer, is connected, by a branch pipe C, having a valve D and a check-valve E, with the inner end of the cylinder F, located centrally under the car-platform, as shown in the drawings.

In the cylinder F is arranged to slide a piston G, having a suitable packing and carrying the piston-rod H, connected, by a ball-and-socket joint H', with the rod I', carrying at its outer end the buffer-plate I, held in front of the nose-piece A' of the platform A. The piston-rod H is guided in the cylinder-head J, provided with a cock K, serving to form a vacuum in the cylinder F, as herein-
after more fully described. From the rear end of the cylinder F also leads a small drain-pipe L, extending to one side of the platform and provided with a valve N, which when opened lets out air from the rear end of the cylinder F. In the inside of the cylinder F is formed a longitudinally-extending groove O, (see Figs. 2 and 3), which permits the air to pass from the rear end of the cyl-

inder F to the front, provided the piston G stands directly in the middle of the groove, as shown in Fig. 3.

The operation of the device is as follows: When the valve D in the branch pipe C is open the compressed air from the main pipe B passes through the said branch pipe C, past the check-valve E, into the rear of the cylinder F, in which the compressed air acts on the piston G and forces the same outward, so that the buffer-plate I is moved in contact with the opposite buffer-plate on the next following car. The two cars are then pushed apart, so that all slack between the two draw-heads is taken up. As the piston G operates against an elastic body—that is, the compressed air—all jar incident to the motion of the train is taken up by the said compressed air and the cars are relieved from all jar. It will be seen that when two cars are pressed toward each other the respective buffer-plate I moves inward, so that the piston G moves against the air-cushion in the cylinder, and as the air is still more compressed by this movement a very strong cushion is formed, so that there will be no lost motion between the buffers.

My buffers are always jammed against each other by the air-pressure in the cylinders, and when a coupling or uncoupling is to be made the connection between the main pipe B is cut off by means of the valve D, so that the pressure can be released from the cylinder through the small pipe L by opening its valve N. In case the pressure from the opposite car against the buffer-plate I is very great and moves the latter inward until the piston G stands over the groove O, as shown in Fig. 3, then the compressed air in the rear end of cylinder F passes to the front end of cylinder, thus releasing the pressure in the cylinder and preventing breakage. When the cylinder F is first charged with compressed air, the cock K is opened, so that the piston G in moving to the front end of the cylinder F drives out the air in this front end of the cylinder. The cock K is then closed, and when the piston G moves rearwardly a vacuum is formed in the front end of the cylinder. The ball-and-socket joint H' compen-

sates for all lateral motion of the buffer-plate I and its rod I'.

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

1. The combination, with the air-cylinder, having an air-outlet pipe L N near its inner end, and the reciprocating piston and buffer, of the air supply and pressure pipe B, its branch pipe C connecting with the inner end of cylinder, and the stop-cock D, applied to said branch pipe, as shown and described, whereby air-supply may be cut off from the cylinder and pressure in rear of the piston relieved, when required for the purpose of relieving pressure between buffers, for uncoupling, as specified.

2. The combination, with cylinder F, and the piston and buffer, of the air-outlet and

stop-cock K, attached to the front end of said cylinder, and the air-supply pipe B C, connected with the other end of the same, as shown and described, whereby a vacuum may be formed in front of the piston, as and for the purpose specified.

3. The combination of the buffer and piston G with the air-cylinder F, having the lengthwise groove O located in its inner side and near its inner end, as shown and described, whereby the pressure in rear of piston is automatically relieved when the latter is near the inner limit of its stroke, as specified.

FRANK S. WAY.

Witnesses:

G. B. HOWARD,

GEORGE M. LEWIS.