

No. 760,190.

PATENTED MAY 17, 1904.

G. W. GAPEN.
COMPRESSED AIR LUBRICATOR.

APPLICATION FILED DEC. 8, 1902.

NO MODEL.

2 SHEETS--SHEET 1.

Fig. 1.

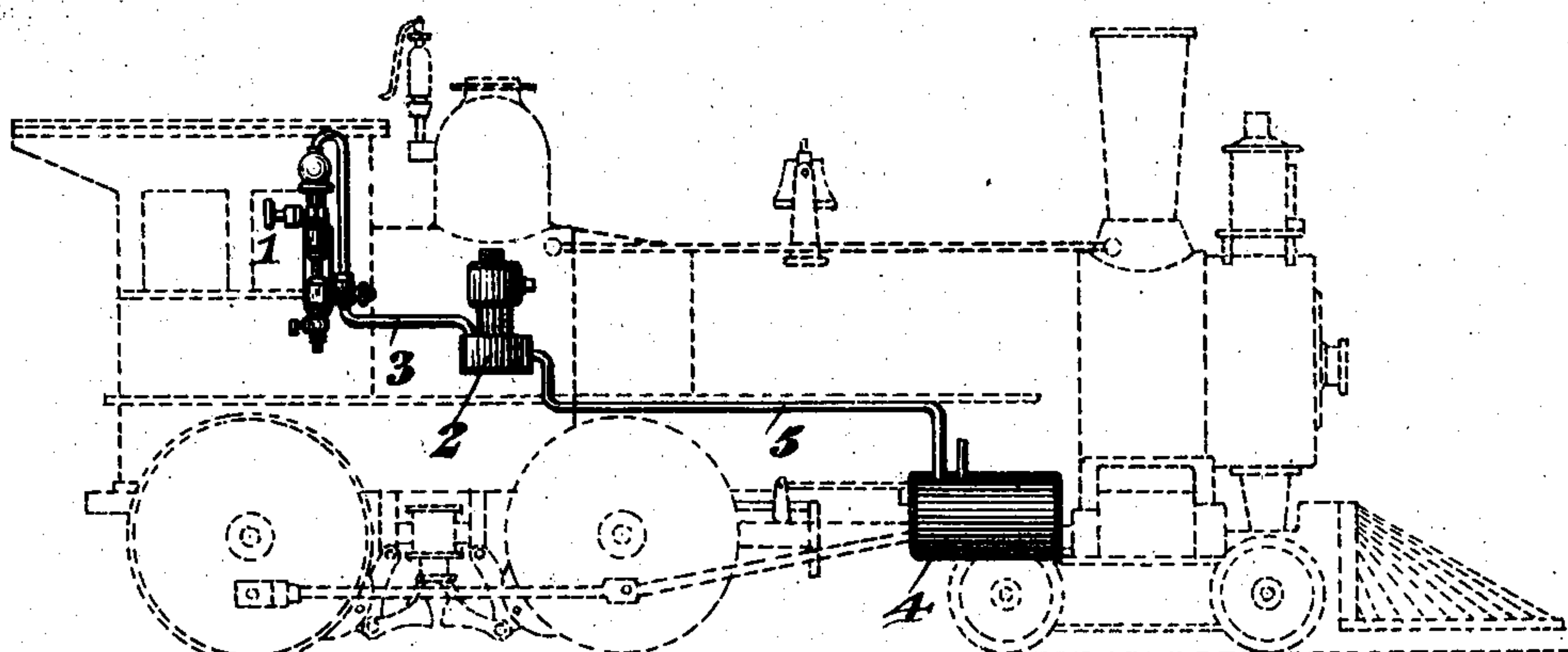
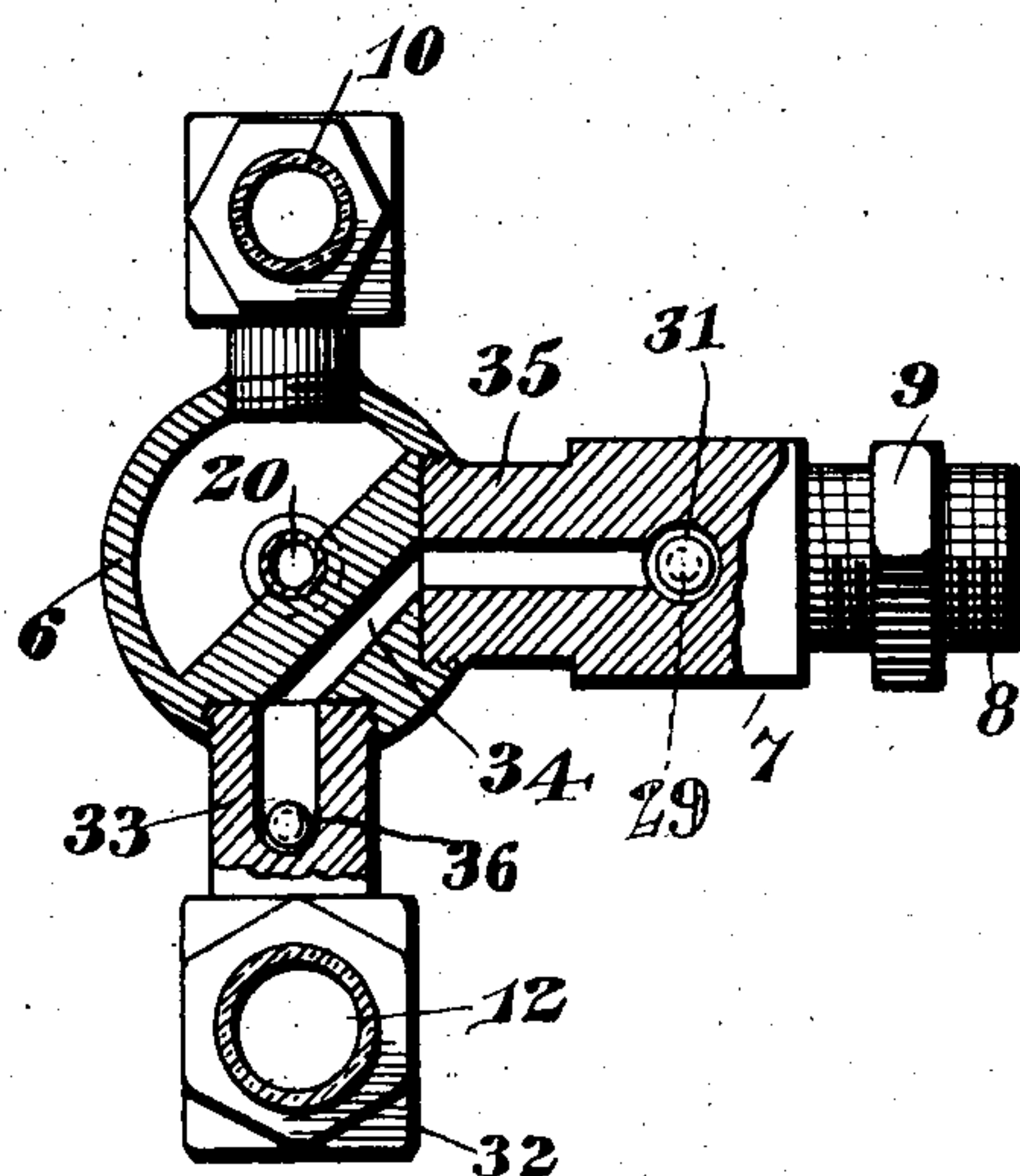


Fig. 4.



G. W. Gapen, Inventor

የፊ

E. G. Siggers

Attorney

Witnesses

Jas. E. McCathran
H. J. Shepard

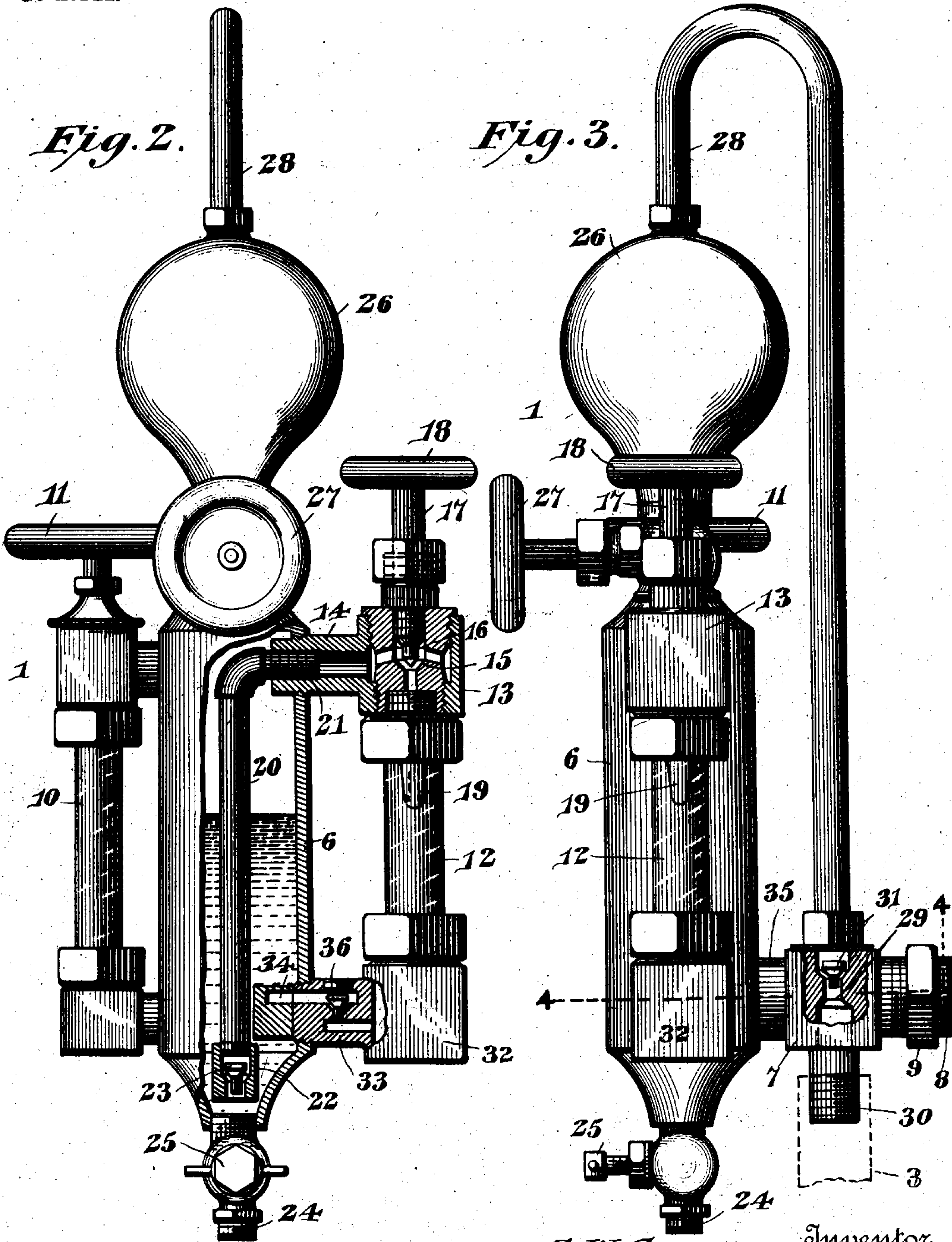
No. 760,190.

PATENTED MAY 17, 1904.

G. W. GAPEN.
COMPRESSED AIR LUBRICATOR.
APPLICATION FILED DEC. 6, 1902.

NO MODEL.

2 SHEETS—SHEET 2.



G. W. Gapen, Inventor

By

E. J. Siggers

Attorney

Witnesses
Jas. E. McCathran
W. J. Shepard

UNITED STATES PATENT OFFICE.

GEORGE W. GAPEN, OF MILWAUKEE, WISCONSIN.

COMPRESSED-AIR LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 760,190, dated May 17, 1904.

Application filed December 6, 1902. Serial No. 134,114. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. GAPEN, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Compressed-Air Lubricator, of which the following is a specification.

The invention relates to improvements in compressed-air lubricators.

The object of the present invention is to improve the construction of compressed-air lubricators and to provide a simple and comparatively inexpensive one designed for lubricating the air-pistons of air-pumps in compressed-air railway-brake systems and to supply the lubricant when the pump is in operation to charge the main reservoir.

Another object of the invention is to provide a lubricator which will be controlled by the pump and which will operate either slow or fast, according to the rapidity with which the pump is operated.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a side elevation showing the outline of a locomotive in dotted lines, with the present apparatus, including the pump and the main reservoir, in full lines. Fig. 2 is a front elevation of the lubricator proper, parts being broken away to show the interior thereof. Fig. 3 is side elevation of the lubricator, parts being broken away to show the valve for preventing back pressure from the dome of the lubricator to the pump. Fig. 4 is a cross-sectional view taken substantially on the line 4-4 of Fig. 3.

Like characters of reference designate corresponding parts in all the figures of the drawings.

For a general understanding of the relation between the present lubricator proper with

respect to the air-pump and main reservoir of an air-brake system reference is had to Fig. 1 of the drawings, wherein the character 1 illustrates the lubricator, located within the cab of the locomotive, the air-pump being shown at 2 and connected to the lubricator by means of the pipe 3, which pierces the top of the pump at one side of the center thereof, preferably in the opening commonly provided for the usual oil-cup. The reference character 4 designates the main reservoir, which is charged with compressed air from the pump by means of the pipe 5. With the exception of the lubricator and the pipe 3 the parts just described are common and well known, and therefore need no detail illustration and description, and, furthermore, may be arranged in a different manner upon the locomotive without affecting the operation of the present device.

The lubricator proper has been shown in detail in Figs. 2, 3, and 4 and comprises a tubular or cylindrical upstanding body 6, which is provided at its back and at its lower end with a rearwardly-projected bracket 7, the outer end of which is provided with a substantially horizontal screw-threaded stem or post 8 to be screwed into an opening in some appropriate portion of the cab and is provided with a suitable jam-nut 9. At one side of the body is the usual filler-tube 10, of glass, having the hand-wheel 11 at its upper end for controlling the plug within the tube. At the opposite side of the body there is the usual glass sight-feed tube 12, which is provided at its upper end with the bracket or fitting 13, having the pipe or nipple 14, which is screwed into the upper end of the adjacent side of the body 6. There is a valve-seat 15 in the fitting 13, with a valve 16 to cooperate with the valve-seat and having a screw-threaded stem 17, provided at its upper end with a hand-wheel 18 for controlling the valve. Within the sight-feed tube 12 is a drip-tube 19, which depends from the valve-seat 15. Located centrally and longitudinally within the body 6 is an upstanding pipe 20, which is provided at its upper end with an elbow 21, connected to the pipe or nipple 14. The lower end of the pipe 20 is situated near the bottom of the body 6 and is

open, there being an open-ended valve-casing 22, detachably fitted to the bottom of the pipe and carrying a gravity check-valve 23. At the bottom of the body is a drip-tube 24, having an adjustable screw-threaded plug 25, transversely piercing the pipe, so as to normally close the same, and capable of being adjusted to open when it is desired to clean the lubricator. At the top of the lubricator-body is a dome 26, which forms a compressed-air reservoir in communication with the top of the interior of the body and provided at its lower end with a valve-controlling hand-wheel 27 for cutting off communication between the dome and the oil reservoir or body 6. A bowed pipe 28 pierces the top of the dome and has its lower end connected to the top of the bracket 7 and communicates with the vertical passage 29, which is formed in said bracket, the lower end of said passage or chamber being in communication with a pendent nipple 30, to which is connected the pipe 3, that communicates between the lubricator and the air-pump. The upper end of the passage or chamber 29 is provided with a gravity check-valve 31, so as to prevent back pressure from the dome 26. The bracket or plug 32, which supports the lower end of the sight-feed tube 12, has a hollow stem 33, which pierces the adjacent side of the reservoir 6, so as to establish a communication from the bottom of the sight-feed tube to the chamber 29 in the bracket 7 by means of a pipe or passage 34, which extends through the interior of the reservoir 6 and connects with the tubular stem portion 35 of the bracket 7. A suitable gravity check-valve 36 is provided in this passage, preferably in that portion which lies within the stem 33, so as to be accessible through a normally closed opening in said stem. The check-valve 36 is adapted to shut off back pressure from the glass 12, and it will enable the latter when broken to be replaced by a new tube without requiring the pump to be stopped for such purpose. As best shown in Fig. 4, it will be seen that the passage 34 communicates with the chamber 29 in the bracket 7 at a point below the check-valve 31.

When the lubricator has been set up and connected to the air-pump by the pipe 3 and the pump is started to charge the reservoir 4, the air will be taken through the pipes 3 and 28 to the dome 26 and thence to the oil-reservoir 6, whereby the pressure lifts the valve 22 and forces oil upwardly through the pipe 20 and into the sight-feed tube after it is passed through the passage 34 to the chamber 29, and finally drops down through the pipe 3 to the pump, thereby supplying lubricant to the air-piston during the operation thereof. As soon as the pressure in the main reservoir reaches a predetermined degree the pump is stopped automatically in any well-known or commonly-employed manner and the lubricator will cease its operation, for the reason that

the upward passage of air through the pipe 28 will cease. When the pump works slowly, the air will be forced slowly through the pipe 28, and the lubricator will consequently feed the oil slowly, and when the pump is rapidly operated air will be forced rapidly through the pipe 28, and a rapid feed of the lubricant will result.

From the foregoing description it will be apparent that the lubricator is absolutely automatic and is in operation practically only when the pump is at work. Hence the oil is supplied only when required, and the lubricator requires no particular attention except for supplying oil thereto when required.

What is claimed is—

1. The combination of a lubricator, a pipe designed to communicate with an air-pump and provided with branches connected to opposite portions of the lubricator, and means including check-valves in the branches of the said pipe to normally maintain a state of equilibrium within the lubricator, and to open communication through one of the branches from the lubricator to the pump when the latter is operated.

2. The combination of a lubricator having a dome at its upper end, a pipe designed to communicate with a pump and extending to the said dome, a branch passage leading from the bottom of the lubricator to the said pipe, a check-valve arranged in the branch passage, and another check-valve located in the pipe at a point above the branch passage.

3. A lubricator comprising a body, an air-supply pipe connected to the upper end of the body, a feed-tube in communication with the interior of the body of the lubricator, a branch passage leading from the feed-tube to the air-supply pipe, a check-valve in said passage, and a check-valve in the air-pipe and above the point of communication between the passage and the pipe.

4. A lubricator, comprising a body, an air-supply pipe in communication with the top of the body, a feed-tube at one side of the body and in communication with the upper portion thereof, a pipe disposed longitudinally within the body with its upper end in communication with the feed-tube, a valve for the lower end of the pipe, a valved passage from the feed-tube to the air-pipe, and a valve in the air-pipe and above the valve-passage.

5. A lubricator comprising a body, a supporting-bracket projected laterally from the lower portion of the body and provided with an intermediate vertical chamber, an air-supply pipe connected to the lower end of the chamber, a branch pipe rising from the top of the chamber and communicating with the top of the body, a feed-tube supported by the body at one side thereof, a valved passage communicating from the lower end of the tube to the chamber in the bracket, a valve in the chamber and above the passage, and a pipe disposed

within the body with its lower end open and its upper end in communication with the feed-tube.

5 6. A lubricator, comprising a body, an upright pipe within the body with its lower open end dipped into the lubricant, an upright feed-tube supported at its lower end by the body with its upper end in communication with the pipe, a supporting-bracket projected laterally
10 from the lower portion of the body and provided with an upright chamber which is open at opposite ends, a valve in the upper part of the chamber, an air-supply pipe connected to the lower end of the chamber, a valved pas-
15 sage leading from the lower portion of the feed-tube to the chamber at a point below the valve thereof, and a pipe leading from the top of the chamber to the top of the body.

20 7. In a lubricator, the combination with an upright body having a dome in communication with its upper end, and provided at its lower end with a laterally-projected bracket

having an upright chamber which is open at opposite ends, of an air-supply pipe connected to the lower end of the chamber, a valve for
25 the upper portion of the chamber, a pipe leading from the top of the chamber to the dome, a valved upright pipe within the body with its lower end dipped into the lubricant, an upright valved feed-tube supported at its
30 lower end upon the body with its upper portion in communication with the upper end of the pipe in the body, and a valved passage leading from the lower end of the feed-tube to the chamber at a point below the valve
35 thereof.

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

GEORGE W. GAPEN.

Witnesses:

B. A. GOTHOMPSON,
JOHN D. GERMANN.