(No Model.)

C. L. BEERS.

COMPENSATING RESERVOIR FOR COMPRESSED AIR.

No. 268,854. Patented Dec. 12, 1882.

FIG. 1.

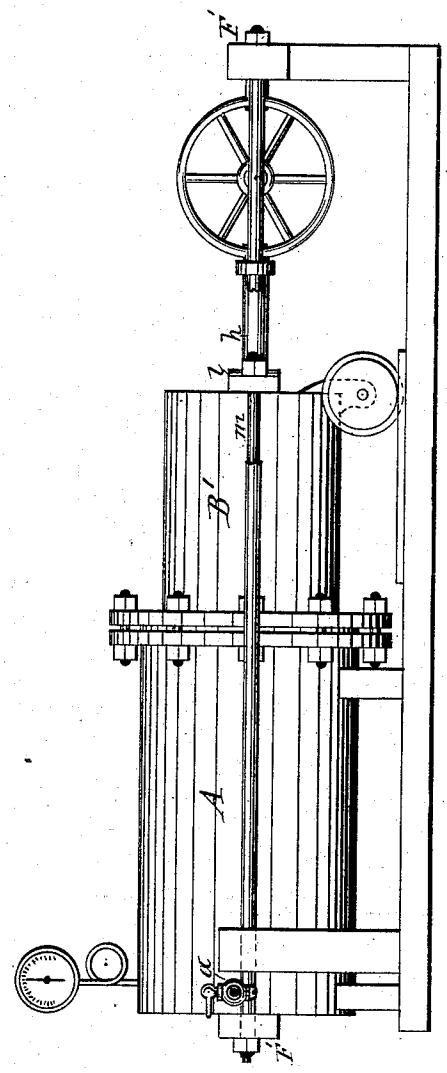
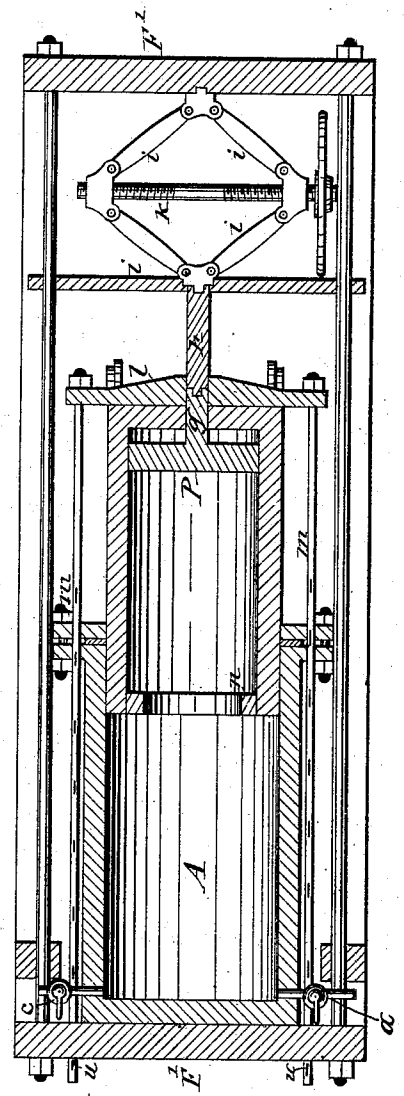


FIG. 2.



WITNESSES—

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per Duell, Laass & Hay

his attys.

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UNITED STATES PATENT OFFICE.

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COMPENSATING-RESERVOIR FOR COMPRESSED AIR.

SPECIFICATION forming part of Letters Patent No. 268,854, dated December 12, 1882.

Application filed August 29, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. BEERS, of Auburn, in the county of Cayuga, in the State of New York, have invented new and useful Improvements in Compensating-Reservoirs for Storage of Compressed Air, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

The object of this invention is to obtain a uniform power from stored compressed air; and it consists essentially of a distensible and contractible reservoir for the storage of the compressed air and a weight or other mechanical power arranged to compress said reservoir and compensate for the loss of the air drawn therefrom, and thus maintain the inclosed air at nearly or quite a uniform pressure in all the various stages of the reservoir, all as hereinafter more fully explained, and specifically set forth in the claims.

The invention is fully illustrated in the annexed drawings, wherein Figure 1 is a side view of my improved compressed-air reservoir in a distended condition, and Fig. 2 is a longitudinal section of the same.

Similar letters of reference indicate corresponding parts.

A represents the main reservoir for the compressed air, it consisting of a stout iron or steel cylinder, provided at one and the same end with a check-valve, *c*, or other suitable inlet for the air and with an air-outlet, *a*, provided with a stop-cock or suitable valve for controlling the egress of air from said reservoir. A pipe extended from the outlet *a* serves to convey the compressed air to the place where it is to be utilized, the latter being deemed unnecessary to be here shown. The opposite end of the cylinder is open, and has fitted air-tight therein a supplemental hollow cylinder, B′, arranged telescopically in the main cylinder A. The outer end of the supplemental cylinder B′ is closed and the inner end open, thus forming by said cylinder, when distended from the main cylinder, an extension of the compressed-air reservoir, as illustrated in Fig. 2 of the drawings.

Inside of the cylinder B′, I fit a piston, P, having a short stem, *g*, projecting from its outer face. (See Fig. 2 of the drawings.) The outer end of the stem *g* is adapted to have spliced to it a rod, *h*, and the outer end of the latter is arranged to receive a rectilineal pressure by either a hydraulic jack or levers or other suitable mechanical power.

For an illustration of the operation of my invention, I have shown in the annexed drawings a set of toggle-levers, *i i*, bearing respectively against the end cross-beam of the supporting-frame F′ of the apparatus and against the end of the rod *h*, and operated by a right-and-left screw, K, in the usual manner, the piston P, being forced into the supplemental cylinder B′ by means of the toggle-levers *i i*. In case the latter cannot effect a stroke of sufficient length to drive the piston P the desired distance, I splice onto the rod *h* another similar rod. This I accomplish by the following instrumentalities: Across the outer end of the cylinder B′, I fasten a yoke, *l*, so as to cause it to move with said cylinder. From the yoke are extended rods *m m*, which pass loosely through the cross-beam F′ at the opposite end of the main cylinder A, and are provided with a series of holes or slots for the reception of a pin or key, *u*, at the outer side of the beam F′. These rods *m* travel with the yoke and cylinder B′, and after the toggles *i i* have exhausted their capacity of action on the end of the rod *h* the pin or key *u* is inserted in the hole or slot of the rod nearest the rear face of the beam F′, thereby retaining the cylinder B′, while retracting the toggle-levers and splicing onto the rod *h* another similar rod adapted to receive the succeeding pressure of the toggle-levers *i i*. The inner end of the cylinder B′ is provided with a shoulder, *n*, to arrest the piston P after it has traveled the length of said cylinder.

A further application of the power on the end of the rod *h* compels the piston to force the supplemental cylinder B′ into the main cylinder A, and thus continues to apply pressure to the inclosed air as rapidly as it is drawn from the cylinder A. It will be observed that by the employment of the piston P, in conjunction with the supplemental cylinder B′ tele-

scoping in the main cylinder A, in the manner hereinbefore described, I not only maintain a uniform pressure on the stored compressed air, but also materially increase the capacity of the reservoir.

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

1. The combination, with the cylinder A, of the supplemental telescopic cylinder B′, provided with the shoulder *n*, the piston P, provided with the rod *g*, and mechanism for operating said piston, substantially as described and shown.

2. In combination with the cylinder A, the supplemental cylinder B′, provided with the shoulder *n*, the piston P, provided with the rod *g*, splice-rods *h*, yoke *l*, rods *m m*, keys *u*, cross-beam F′. and mechanism for operating the piston P, all combined and operating substantially in the manner described and shown, for the purpose specified.

In testimony whereof I have hereunto signed my name and affixed my seal, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 24th day of August, 1882.

CHARLES L. BEERS. [L. S.]

Witnesses:
WM. C. RAYMOND,
F. H. GIBBS.