(No Model.) 2 Sheets—Sheet 1.

F. W. CHAFFEE.

SPRING COMPRESSING MECHANISM.

No. 554,476. Patented Feb. 11, 1896.

Fig. 2.

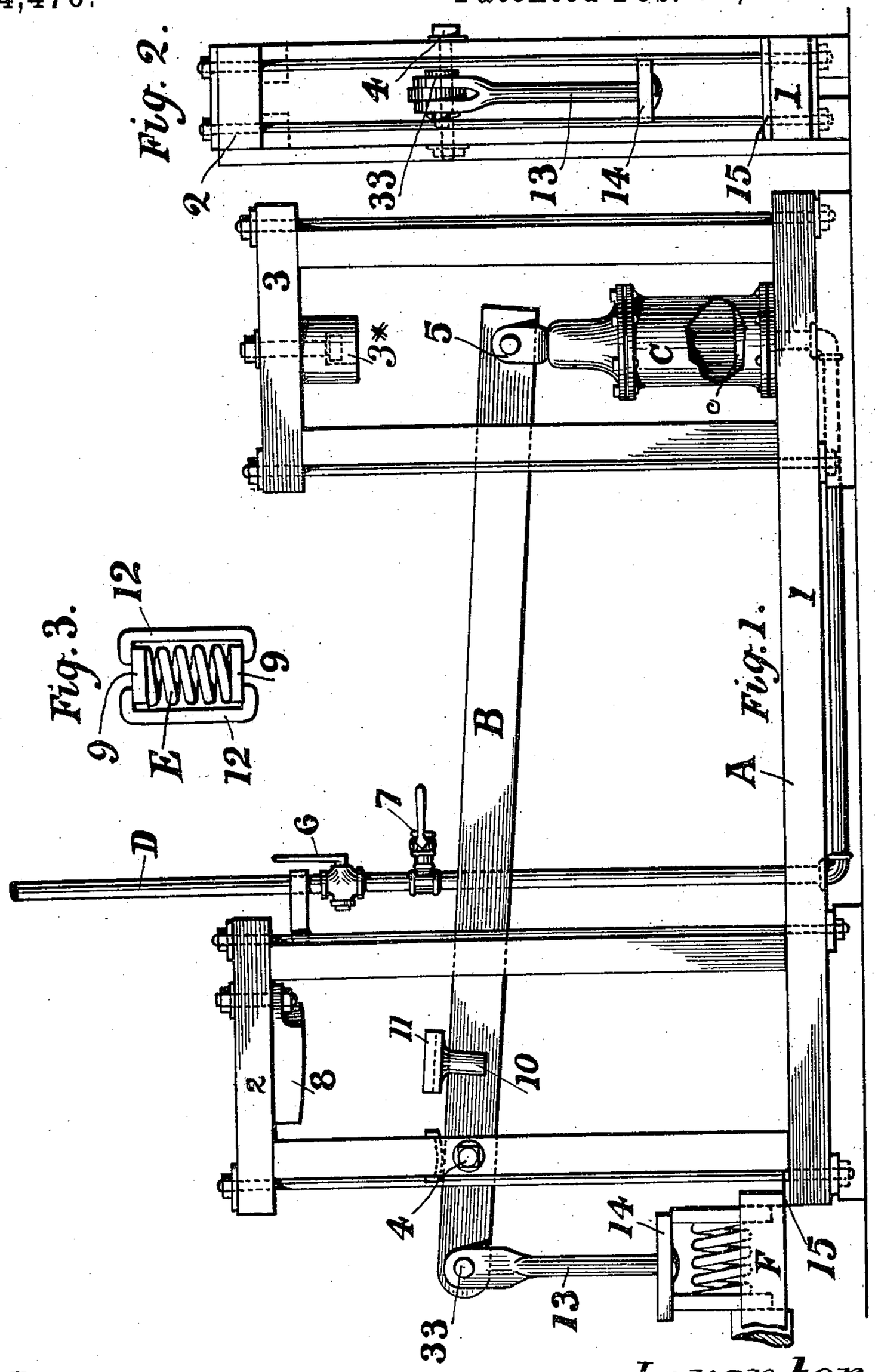


Fig. 1.

Fig. 3.

Witnesses:
Reinhardt Heller.
Benj Buxton

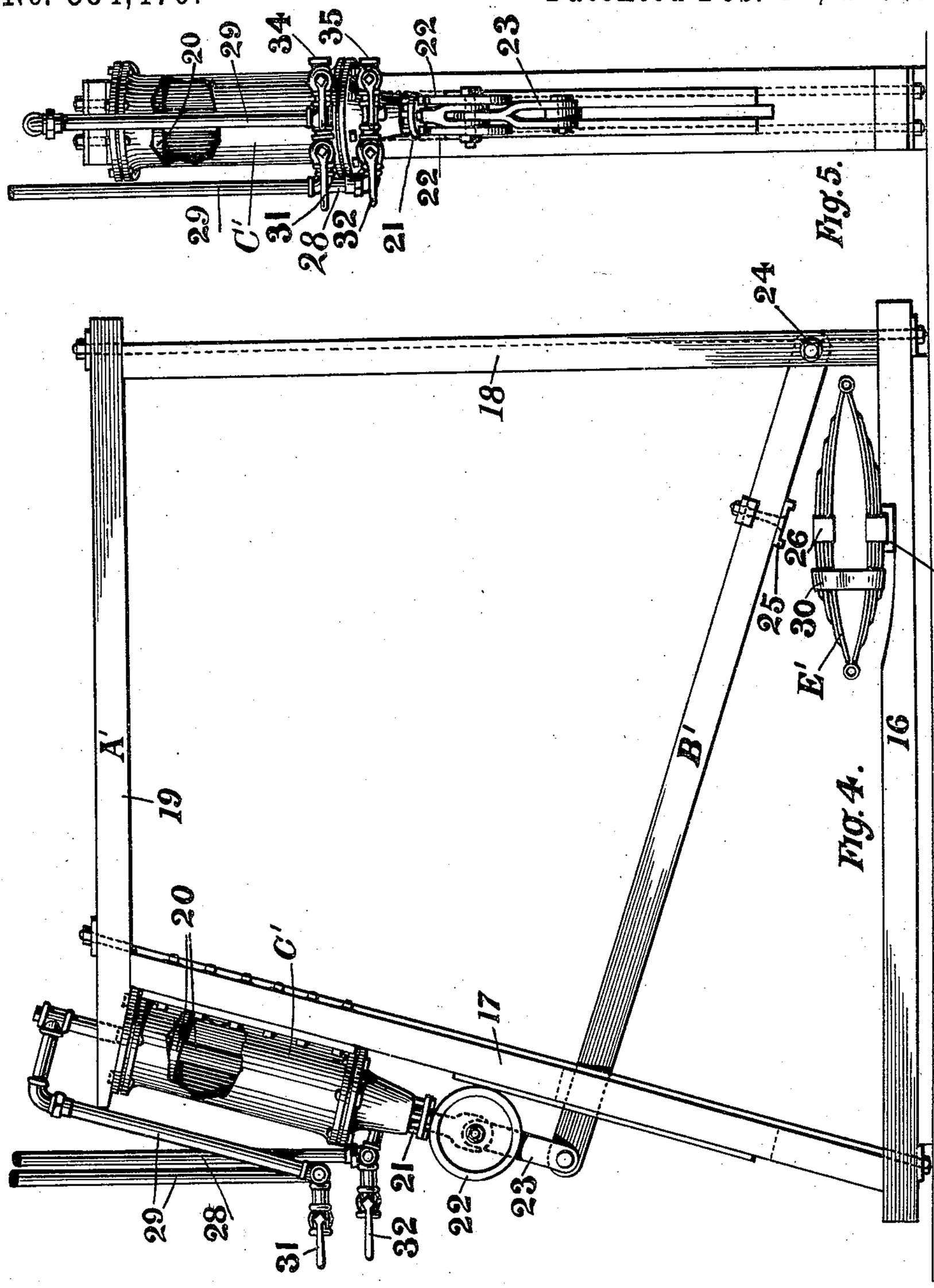
Inventor:
Frank. W. Chaffee,
By William H. Low.
Attorney.

(No Model.) 2 Sheets—Sheet 2.

F. W. CHAFFEE.

SPRING COMPRESSING MECHANISM.

No. 554,476. Patented Feb. 11, 1896.



Witnesses:
Reinhardt Heller.
Berry & Burton

Inventor:
Frank. W. Chaffee,
By William H. Low.
Attorney.

UNITED STATES PATENT OFFICE.

FRANK W. CHAFFEE, OF ALBANY, NEW YORK.

SPRING-COMPRESSING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 554,476, dated February 11, 1896.

Application filed February 11, 1895. Serial No. 537,919. (No model.)

To all whom it may concern:

Be it known that I, FRANK W. CHAFFEE, of Albany, in the county of Albany and State of New York, have invented new and useful Improvements in Mechanisms for Compressing and Retaining in Compressed Condition Springs Used on Railway-Cars, of which the following is a specification.

My invention relates to mechanism for compressing and retaining in a compressed condition springs that are used in the construction of railway-cars; and the object of my invention is to provide facilities for compressing such springs and retaining them in a compressed condition until they are properly fixed in their places on a railway-car. This object I attain by the mechanism illustrated in the accompanying drawings, which are herein referred to and form part of this specification, and in which—

Figure 1 is a side elevation of the form of my invention adapted to compress a lighter class of springs; Fig. 2, an end elevation of the same; Fig. 3, a side elevation of a spiral spring retained in a compressed condition; Fig. 4, a side elevation of a modified form of my invention adapted to compress a heavy class of springs, and Fig. 5 an end elevation of Fig. 4.

In the machine represented in Figs. 1 and 2 A designates the framework of the machine, consisting of a bed-piece 1, having a gallows-frame 2 at one end and another gallows-frame 3 at the opposite end. A compressing-lever B is fulcrumed, as at 4, to the gallows-frame 2, so as to vibrate vertically. To the longer end of the lever B is connected, by a jaw 5 or other suitable means, a piston *c*, that is fitted to reciprocate in a cylinder C in such manner that the lever will be moved in its upward stroke by pressure—either steam, compressed air, or other fluid under pressure—applied to the under side of said piston. The downward movement of said lever is preferably effected by gravity alone. A supply-pipe D is arranged to convey the fluid under pressure into the lower end of the cylinder C, so that it will act against the lower face of the piston *c* and effect the upward movement of the lever B. The supply-pipe D is provided with a stop-cock or valve 6 for governing the inflow of fluid into the cylinder C, and said supply-pipe is also provided with an eduction-cock 7, which governs the escape of the spent fluid from said cylinder. To the lower face of the head of the gallows-frame 2 a seat 8 is secured to take the pressure applied to a spiral spring E when the latter is to be compressed. A washer 9 is fixed at each end of said spring to remain permanently, both during the operation of compressing the spring and after it is placed in position in a car. A saddle 10 is attached to the upper side of the lever B in a position where it will coact with the seat 8 in the operation of compressing a spring E, and in order to prevent said spring from being displaced in the operation of compressing it the saddle 10 is provided with flanges 11, which are arranged at parallel sides. Said saddle is preferably made in the form of an oblong parallelogram in order to facilitate the application of clamps 12 for retaining the spring in its compressed condition, and it is obvious that said clamps must be applied before the spring is removed from the machine. To the shorter end of the lever B there is jointed, as at 33, a rod 13, to whose lower end there is attached a head 14 for the purpose of forcing a spring E into the boxed end of a draw-bar F, as commonly used at the inner end of a car-coupling, and the base-piece 1 is usually provided with a seat 15 for the purpose of receiving the end of the draw-bar preparatory to the operation of pressing the spring E and its attached washers into said draw-bar. The head of the gallows-frame 3 is preferably provided with a buffer 3* to receive an impact of the lever B during the operation of pressing a spring into the draw-bar F.

The machine just described operates in the following manner: While the lever B is depressed, as shown in Fig. 1, a coiled spring E, with a washer 9 at each end, is placed in a vertical position on the seat 10, and compressed air or other fluid under pressure is admitted into the cylinder C to force the piston *c* upward. Thereby the lever B is moved to compress the spring E, and when the required compression is attained the clamps 12 are applied to said spring by hooking their two ends over the outer faces of the washers 9. Then, after closing the stop-cock 6, the cock 7 should be opened to allow the fluid under

pressure to escape from the cylinder C, thereby permitting the lever B to move downward by the force of gravity, leaving the compressed spring E free to be removed from the saddle 10. To press a spring E into a draw-bar F the end of the latter should be rested on the seat 15 and the spring E (with the washers 9 attached thereto and the spring retained by the clamps 12) is placed over the opening of said draw-bar. Then by admitting the pressure into the cylinder C the lever B will be moved to press said spring into its place in said draw-bar, and in effecting this the clamps 12 will be automatically removed from said spring.

In the modification of my invention shown in Figs. 4 and 5, which is designed for compressing springs that are too heavy to be easily raised to a height required in my machine hereinbefore described, A′ designates the frame of the machine, consisting of a bed-piece 16, posts 17 and 18, and girt 19, which are properly framed and bolted together. A double-acting cylinder C′ is secured to the frame A′ and a piston 20 is fitted to reciprocate in said cylinder. The rod for said piston passes through a stuffing-box 21, and is connected to suitable guides 22 for maintaining said rod in a proper position during its reciprocations. Said piston-rod is connected by a link 23 to one end of a lever B′, whose opposite end is fulcrumed, as at 24, to the post 18. Said lever, in a machine adapted to compress elliptic springs, as shown in Fig. 4, should have a bearing-plate 25 secured to the under face of it in a position to bear upon the upper band, 26, of an elliptic spring E′, and a seat 27 is fixed to the bed-piece 16 in a position to receive the lower band of said spring. The cylinder C′ has two induction-pipes 28 and 29 connected thereto, the first of which leads into the lower end of the cylinder and is provided with a stop-cock 32 and with an eduction-cock 35, by which admission and emission of compressed air into and out of the upper part of said cylinder is governed, as ocasion may require. In a like manner the pipe 29 is arranged to convey the compressed air into and out of the upper end of said cylinder, a stop-cock 31 and an eduction-cock 34 being provided to operate in the manner hereinbefore described in respect to the like cocks provided for the pipe 28. For the purpose of retaining the elliptic spring E′ in a compressed condition a clamping-band 30 is made to slip onto said spring, as shown in Fig. 4.

The modified form of my invention, in which the compressing-lever B′ is operated in both directions by the piston 20, operates in the following manner: The lever B′ being in its raised position, as shown in Fig. 4, a spring E′ is placed on the seat 27, said spring being in its expanded condition and the stop-cock 31 is opened, the eduction-cock 34 being closed to allow compressed air to flow into the upper part of the cylinder C′ and force the piston 20 downward, and by this movement of said piston the lever B′ will be forcibly moved to compress the spring E′, and when such compression is carried to a required degree the clamping-band 30 can be applied to said spring, as shown in Fig. 4. Then after opening the eduction-cock 34 the stop-cock 32 should be opened sufficiently to carry the piston 20 upward. Thereby the lever B′ will be raised to release the spring E′. After the spring E′ has been removed from the machine, the latter will be in condition for a repetition of the operation just described.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a spring-compressing mechanism, the combination of a compressing-lever, a cylinder provided with a reciprocating piston that is moved by compressed air or other fluid under pressure; said piston being connected to the compressing-lever so as to impart movement to the latter, and means—substantially as set forth—for manually governing the flow of said fluid into and out of said cylinder, as herein specified.

2. In a spring-compressing mechanism, the combination of a cylinder provided with a piston fitted to reciprocate therein by means of compressed air or other fluid under pressure, a compressing-lever connected to said piston, a seat on said lever adapted to retain a spring in position while the latter is being compressed, and means—substantially as specified—for manually governing the inflow and outflow of said fluid; whereby the act of compressing a spring can be temporarily suspended or terminated at any point of the operation, as herein specified.

3. The combination, with a power-impelled compressing-lever, of a head 14 connected to said lever, and a seat 15 fitted and arranged to receive a draw-bar F, while said lever is forcing a spring into the draw-bar, as and for the purpose specified.

FRANK W. CHAFFEE.

Witnesses:
WM. W. LOW,
A. F. LOW.