

No. 840,524.

PATENTED JAN. 8, 1907.

C. R. STURDEVANT.
 COMPRESSOR FOR RAIL BONDS.
 APPLICATION FILED AUG. 10, 1905.

Fig. 1.

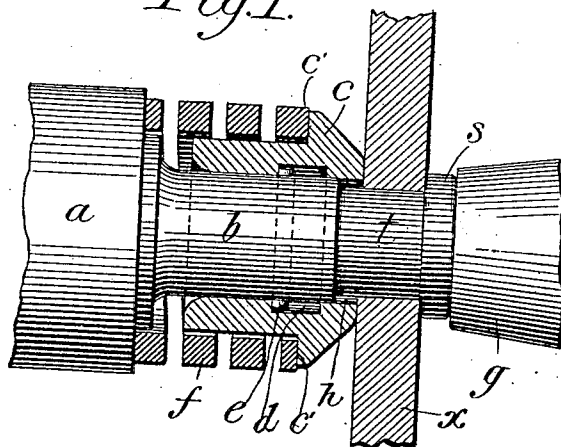
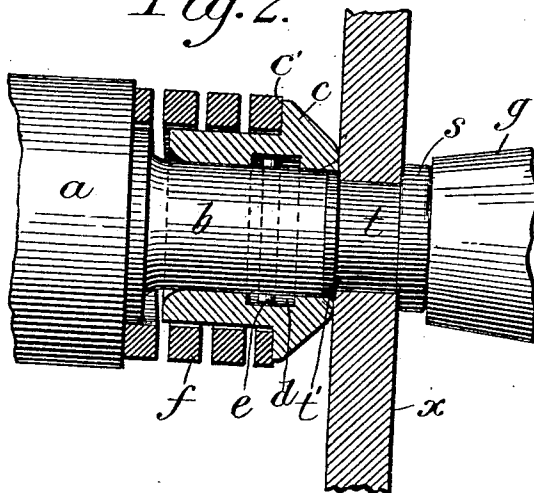


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

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COMPRESSOR FOR RAIL-BONDS.

No. 840,524.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed August 10, 1905. Serial No. 273,623.

To all whom it may concern:

Be it known that I, CHARLES R. STURDEVANT, a citizen of the United States, residing at Worcester, county of Worcester, State of Massachusetts, have invented certain new and useful Improvements in Compressors for Rail-Bonds; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to rail-bond compressors, especially revolving-screw compressors, and has for its object to provide the ram or plunger of a compressor with a spring-pressed sleeve normally projecting beyond the plunger end to engage the rail-bond terminal, so that the weight of the compressor is supported by the terminal, the necessity of providing a centering spur for the plunger is obviated, the crown of the terminal is drawn forcibly into engagement with the web of the rail, and the upset end of the terminal is confined within the space included by the plunger-face and the projecting sleeve end. The effect last mentioned is of particular importance, in that as compression of the terminal is carried to the desired limit the metal of the terminal is forced out over the rail-surface adjacent the terminal-receiving hole, and the amount of the overflow is limited by the projecting sleeve, resulting in several distinct advantages, among which may be mentioned the following: A practically perfect head is formed on the upset end of the terminal, less of the total energy developed is absorbed in compressing the copper between the rail-surface adjacent the hole and the end of the ram, and a correspondingly larger portion of the energy is available for compressing the copper of the terminal into the hole, and therefore improving the contact between the terminal and the walls of the hole in the rail, and as the end of the terminal in the upsetting operation expands in the sleeve the ram or plunger centers itself.

In the accompanying drawings, Figure 1 is a side elevation of the ends of the anvil and plunger of a compressor, showing the collar and its spring in section, the apparatus being illustrated as in the preliminary stage of compressing a rail-bond terminal in the hole of a

rail-web. Fig. 2 is a like view, showing the relation of the parts of the apparatus in the final stage of compressing the terminal stud.

Referring to the drawings, *a* indicates the ram or plunger of a compressor, preferably of the type known as a "screw" compressor, where the plunger turns as it is forced against the terminal, or a hydraulic press, and *g* indicates the anvil, which of course is connected in the usual manner to the parts supporting the ram or plunger.

The end of the plunger is preferably formed with an end *b* of reduced cross-sectional area slightly longer than the finished crown of the rail-bond terminal. Slidably and rotatably mounted on the reduced end *b* is a sleeve *c*. In order to hold the sleeve upon the plunger end and permit a limited sliding movement of said sleeve, the latter is provided with a recess *d*, which receives the ends of a transverse pin *e*, passed through the end of the plunger, and the recess *d* is made annular in order to prevent the breaking of the pin *e* when the sleeve is filled with the surplus metal of the terminal. This is an important feature, because, as will readily be understood, the plunger turns as it is forced against the terminal, and when the end of the terminal has been spread laterally, so as to fit tightly in the sleeve, the sleeve can no longer turn, and unless the sleeve and plunger be relatively rotatable the pin must break whenever the rotation of the sleeve is prevented by the jamming of the upset end of the terminal in its mouth.

Surrounding the sleeve *c* and confined between a flange *c'* thereon and the shoulder at the junction of the larger and smaller portions of the plunger is a stout helical spring *f*, which serves to hold the sleeve *c* in its extreme outer position on the plunger end, so that the collar forms, with the face of the plunger, a cavity to receive the end of the rail-bond terminal.

The mode of applying and operating the device, as hereinbefore described, is substantially as follows: The rail-bond terminal *t* is inserted in the hole drilled in the web of the rail *x* and the compressor applied, as in Fig. 1, by bringing the anvil *g* against the head *s* of the terminal and adjusting the plunger *a* so that its face lies adjacent to the end of the

terminal to be upset and the sleeve *c*, surrounding the projecting terminal end, thereby serving to support the weight of the compressor upon the terminal to properly center the plunger on the terminal, avoiding the use of a centering-spur on the plunger. As pressure is applied to the ram or plunger at the beginning, the crown *s* of the terminal is forced firmly against the surface of the rail-web *x* by the action of spring *f*, thereby insuring good contact at this point. This serves the purpose of the outer screw in the ordinary form of hand screw compressors. As the compression is carried farther the metal in the terminal end is forced by the plunger to flow out over the surface of the rail-web surrounding the hole, and as the amount of such overflow is limited or restricted by the inner walls of the sleeve *c* it will be apparent that less of the energy developed will be expended in compressing the metal of the terminal between the plunger end and the adjacent rail-surface, and a correspondingly large portion of the energy is available for forcing and compressing the copper into the hole, and thereby improving the contact between the terminal and the walls of the hole and at the same time forming a practically perfect head *t* from the upset metal of the terminal, which is forced

into intimate contact with the side of the web *x*.

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

In a compressor for applying rail-bond terminals to conductor-rails, the combination of a plunger, having a reduced end *b* with an operating-face of substantially the same area as the head to be formed on the terminal, a spring-pressed sleeve *c* encircling the plunger end, and having an internal diameter relatively proportioned to that of the terminal to limit the lateral spread of metal in the terminal end, an annular recess *d* on the inside of the sleeve, a pin *e* passing transversely through the end of the plunger with its ends projecting into the recess, the sleeve *c* projecting normally beyond the end of the plunger, the recess *d* being wide enough to permit the sleeve to have a limited sliding movement on the plunger end, and the annular recess permitting relative rotation between the sleeve and the plunger.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES R. STURDEVANT.

Witnesses:

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CHARLES F. GARLAND.