

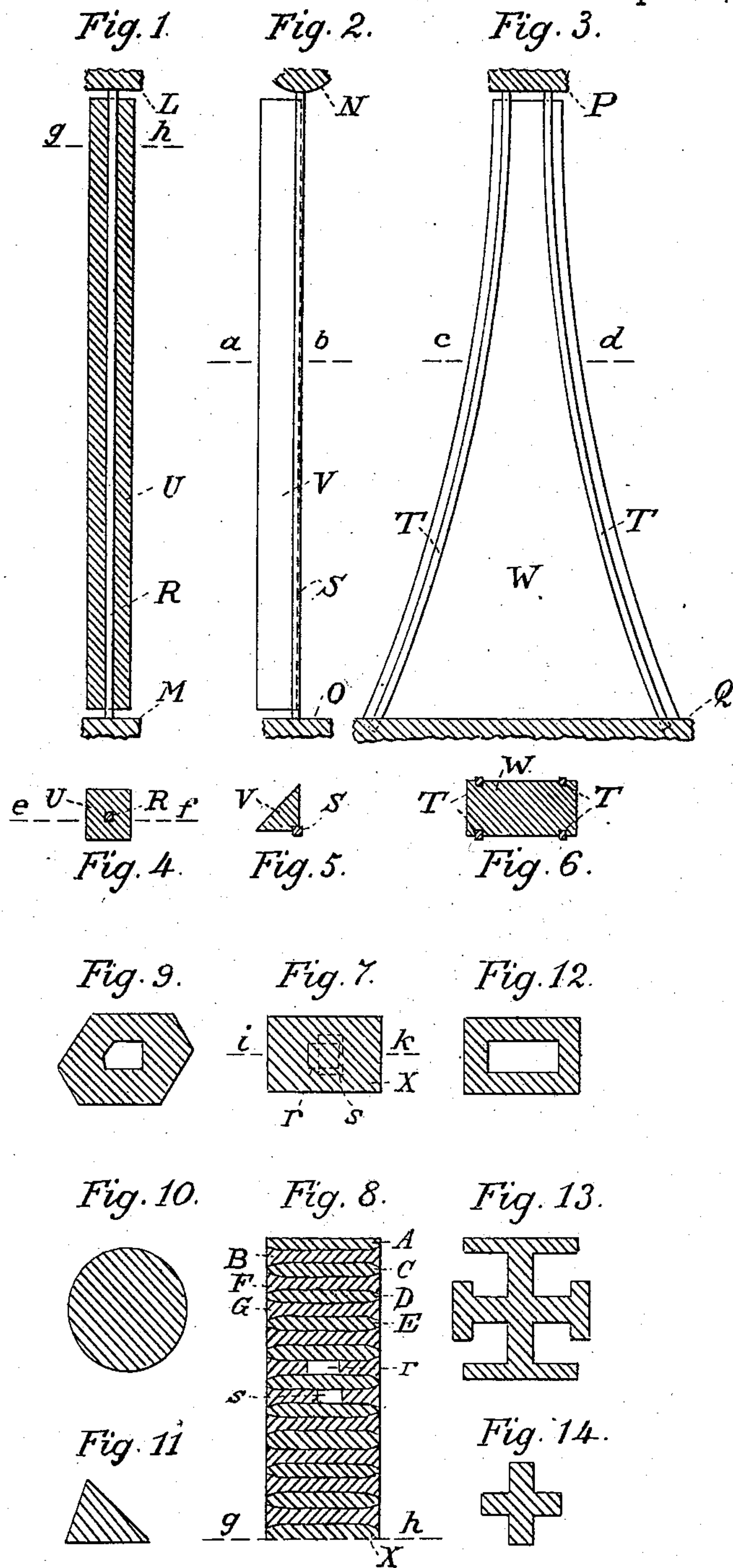
(No Model.)

C. STEINER.

BEARING RIB FOR COMPRESSION MEMBERS FOR BUILDING PURPOSES.

No. 567,202.

Patented Sept. 8, 1896.



Witnesses:

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UNITED STATES PATENT OFFICE.

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BEARING-RIB FOR COMPRESSION MEMBERS FOR BUILDING PURPOSES.

SPECIFICATION forming part of Letters Patent No. 567,202, dated September 8, 1896.

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To all whom it may concern:

Be it known that I, CHARLES STEINER, a citizen of Switzerland, residing at Elmira, county of Chemung, State of New York, have invented a new Bearing-Rib for Compression Members for Building Purposes; and I hereby declare that the following is a full, clear, and exact description of said invention.

The columns and compression members to which my invention relates serve especially for the purpose of transmitting compression stresses in a straight line or along a certain curve from one body to another. The bending movements, which may act on the compression member, in addition have nothing to do with this invention, which concerns exclusively the transmission of the stresses in said curve or straight line, but not the other function of certain columns, to resist against bending influences from outside forces. For the purpose of transmitting economically very high stresses in a determined line I provide one or more bearing-ribs of special construction extending over the whole length of column.

In Figure 1 of my drawings is represented the longitudinal section *ef* of a compression member with one bearing-rib transmitting compression stresses between two bodies L and M. Fig. 4 shows its cross-section *gh*. In Fig. 2 is represented in elevation another column or compression member with one bearing-rib transmitting stresses between two bodies N and O. Fig. 5 shows its cross-section *ab*. In Fig. 3 is represented in elevation a column or compression member with four bearing-ribs transmitting stresses between two bodies P and Q. Fig. 6 shows its cross-section *cd*. Fig. 7 shows section *gh*, and Fig. 8 shows section *ik*, of a short portion of a prismatic bearing-rib, such as shown at top of column, Fig. 1. Figs. 9, 10, 11, 12, 13, and 14 show different preferred shapes which the cross-section of the bearing-rib may have.

In all figures similar letters correspond to similar parts.

In Figs. 1, 2, 3, 4, 5, and 6 letters R S T indicate the bearing-ribs, and letters U V W indicate the stiffeners of the columns or compression members.

In Fig. 8 the letters B, F, G, A, C, D, E, and X

indicate some of the stamps or plates of which the portion of bearing-rib is made up. The pressure is transmitted by direct contact from the bodies L M, N O, Q P to the bearing-ribs. These bearing-ribs are so bound to the stiffeners that they are invariably kept in the desired curved or straight line as close as the elasticity of materials allows and practice requires; but they are allowed to slide as much as necessary for the compression within or along the stiffeners, so that the direct compression stresses transmitted by friction to the stiffeners are reduced to an inconsiderable minimum. The stiffeners serve to keep the bearing-ribs in the desired lines throughout the whole length or as far as deemed necessary. The stiffeners must be fixed in their positions and be strong enough to resist all bending movements from whatever cause. They are, however, of usual construction, of any suitable material, and are not a part of this invention. Still they are unavoidable in the application of the new bearing-rib. The novelty relates to the bearing-rib, which is either of iron and steel or of steel only. Whereas for iron and steel compression members the metal has hitherto been cast or rolled in long bars, either filled or hollow or riveted up of long rolled bars, for this bearing-rib the metal will be cut or stamped to thin disks or plates (here called "stamps") B F G A C D E X. These stamps may have any desired shape, provided only that the bearing-surfaces are so close together that when chilled off from red heat the steel is sufficiently hardened throughout. Such chilled plates or stamps have an enormous resistance against pressure and are here used to build a bearing-rib of any length for such pressure.

In order to manufacture a bearing-rib, every second stamp, such as B F G, will be made a chilled cold-steel stamp. The intermediate stamps A C D E are made of forgeable steel and brought between the others in red-hot state and with their fibers or rolling direction crosswise to the chilled stamps. By exerting in longitudinal direction a pressure or stroke on the portion so built up of stamps within a case or frame the stamps will be brought to a tight bearing of surfaces, without interspaces (not required) between the chilled and the hot stamps. By chilling off the portion

of rib thus forged at the free surface the intermediate stamps A C D E X will get hardened at their free surface outside, and, in case of a hollow rib, outside and inside. Thus a
5 strap of chilled metal, interlocked, on account of its shape, will be provided along the whole free surface of the intermediate stamps. The unhardened material inside of the body of the rib, which by itself is of inferior carrying
10 capacity, will thus be firmly embedded in a ring of hardened steel, and thus stands a much higher unit strain than by itself. In certain cases the material of the intermediate stamps brought in in hot state may be com-
15 bined of steel and iron; also there may be holes *r s*, Figs. 7 and 8, provided inside of the hardened stamps, which, when the rib is being forged or pressed, will be filled up with the red-hot forgeable steel or iron from the
20 adjacent stamps. It has been found that in this way a tight bearing of the surfaces can be obtained without any planing or milling, as heretofore used in such cases. The question of the adhesion between the bearing-
25 surfaces of the stamps in the finished rib has nothing to do with this invention, which

proposes to provide a cheap and efficient high-strain bearing-rib for compression stresses only.

Having fully described my invention, I desire to secure by Letters Patent the following claims: 30

1. A bearing-rib for compression members composed of a series of thin steel plates, the alternate one of which is hardened through- 35 out and the remainder only on their outer and inner free surfaces, the plates being arranged with their adjacent surfaces in close contact and with the fiber of the two sets of plates crossing each other. 40

2. The method of constructing a bearing-rib for compression members which consists in heating a series of unhardened-steel plates, placing them while red-hot alternately between a series of hardened-steel plates with 45 the fibers of the two series crossing and then subjecting the built-up plates to pressure to cause them to closely adhere to each other.

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Witnesses:

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