

E. WITZENMANN & E. STEIN.
SPIRAL METALLIC HOSE.
APPLICATION FILED MAR. 30, 1909.

967,260.

Patented Aug. 16, 1910.
2 SHEETS—SHEET 1.

fig. 1.

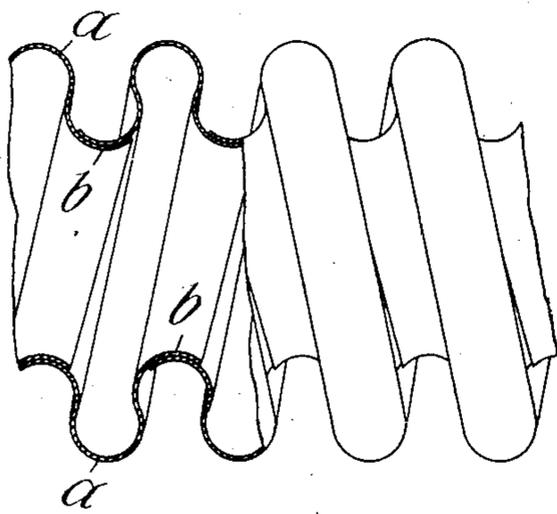


fig. 2.

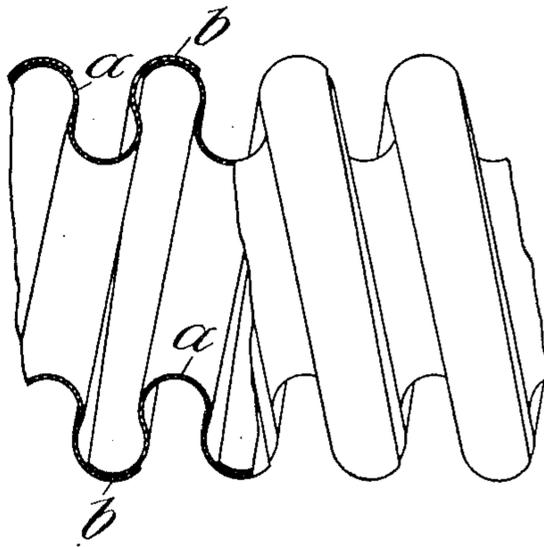


fig. 3.

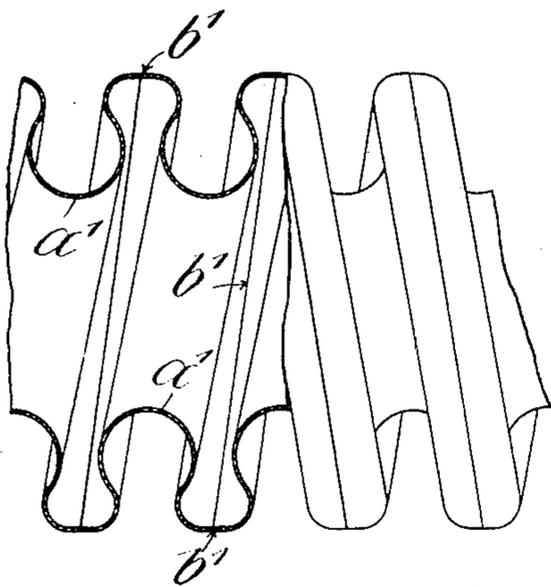
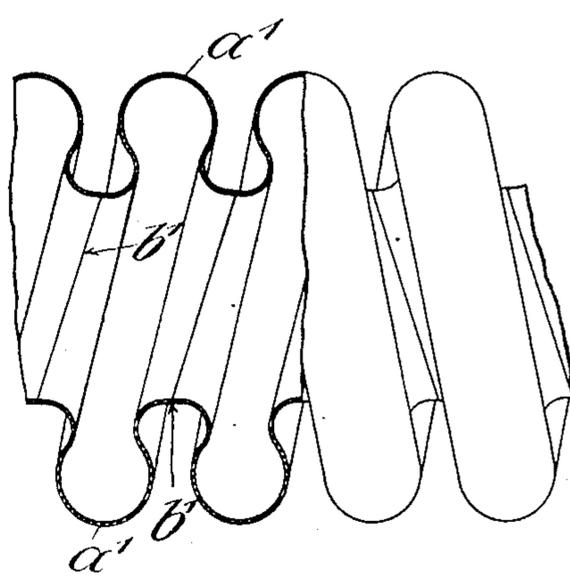


fig. 4.



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2 SHEETS—SHEET 2.

fig. 5.

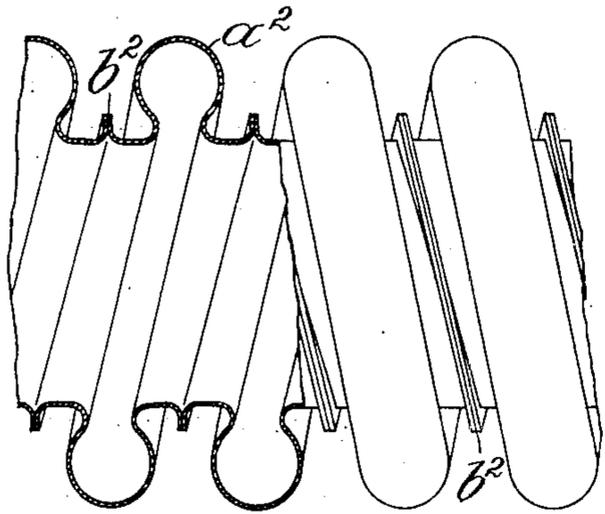


fig. 6.

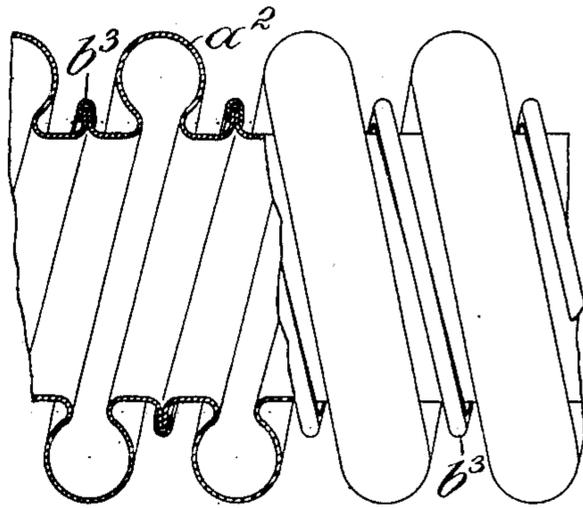


fig. 7.

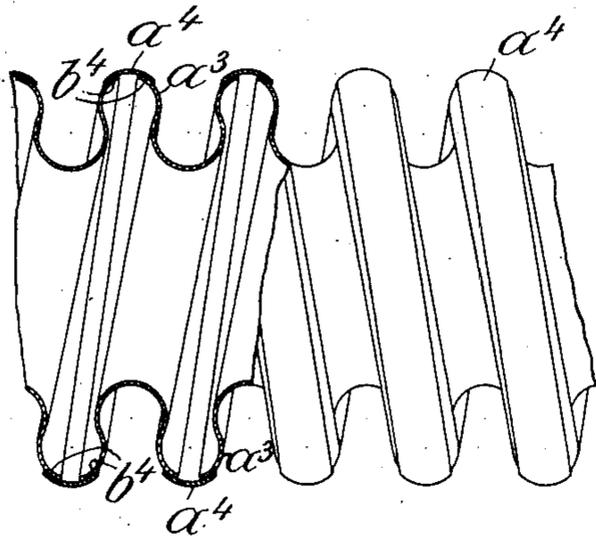
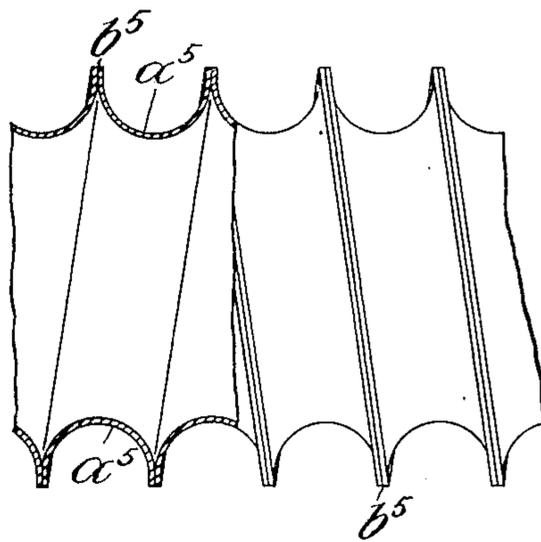


fig. 8.



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UNITED STATES PATENT OFFICE.

EMIL WITZENMANN, OF PFORZHEIM, AND EMIL STEIN, OF CHARLOTTENBURG,
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SPIRAL METALLIC HOSE.

967,260.

Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed March 30, 1909. Serial No. 486,685.

To all whom it may concern:

Be it known that we, EMIL WITZENMANN, manufacturer, a subject of the Grand Duke of Baden, residing at No. 48 Holzgartenstrasse, Pforzheim, German Empire, and EMIL STEIN, engineer, a subject of the Emperor of Austria-Hungary, residing at No. 28 Weimarerstrasse, Charlottenburg, German Empire, have invented new and useful Improvements in Spiral Metallic Hose, of which the following is a specification.

This invention relates to flexible metallic hose and has for its object to provide a hose consisting of spirally wound metal tape.

A further object of this invention is to provide a flexible metallic hose formed of metal tape spirally wound, said metal tape being curved in cross section, the spiral tape forming the hose being so shaped as to admit of a certain amount of extension and flexibility of the finished hose.

A further object of this invention is to provide a flexible metallic hose formed of spirally wound metal tape curved or shaped in cross section and having the contiguous edges of the spirally wound metal tape welded together.

With these objects in view this invention consists in the production of a metallic flexible hose formed of spirally wound metal tape having the contiguous edges of the tape united by a continuous weld.

This invention further consists in providing a flexible metallic hose formed of spirally wound metal tape and having the contiguous edges of the spirally wound metal tape united by a continuous weld in such manner that no packing is required along the contiguous edges of the spiral tape and in such manner that there are no seams or interstices through which leakage can occur.

Referring to the accompanying drawings: Figures 1 and 2 illustrate the flexible metallic hose partly in longitudinal section and showing the contiguous edges of the spirally wound tape overlapping each other and welded together. Figs. 3 and 4 illustrate the flexible metallic hose having the contiguous edges of the spirally wound tape butt welded. Fig. 5 illustrates the flexible metallic hose having the contiguous edges of the spirally wound tape bent outwardly and welded together. Fig. 6 is a view similar to Fig. 5 showing a small spiral tape covering the con-

tiguous edges of the spirally wound tape and welded thereto. Fig. 7 illustrates the flexible metallic hose, the contiguous edges of the spirally wound tape being covered by a small spirally wound tape and welded thereto, and Fig. 8 illustrates the flexible metallic hose in which the spirally wound metal tape is substantially U-shaped in cross section, the contiguous edges of the spirally wound metal tape being welded together:

In Figs. 1 and 2 a designates the spirally wound metal tape approximately U-shaped in cross section, the contiguous edges of the tape overlapping each other and welded together at b .

In Figs. 3 and 4 the spirally wound metal tape a' is substantially U-shaped in cross section and the contiguous edges of the tape are butt welded at b' .

In Fig. 5 the spirally wound metal tape a^2 is substantially U-shaped in cross section and the contiguous edges of the tape are bent outwardly and welded together at b^2 .

In Fig. 6 the spirally wound metal tape a^2 is of substantially the same shape in cross section as that shown in Fig. 5, and a small spiral tape b^3 substantially U-shaped in cross section is arranged over the contiguous edges of the spirally wound metal tape a^2 and welded thereto, said spirally wound metal tape b^3 overlapping the edges of the spirally wound metal tape a^2 as clearly shown.

In Fig. 7 a small spirally wound metal tape a^4 overlaps the contiguous edges b^4 of the spirally wound metal tape a^3 to which edges the tape a^4 is welded.

In Fig. 8 the spirally wound metal tape a^5 is substantially U-shaped in cross section, the contiguous edges of the tape being welded together at b^5 .

While we have illustrated and described several different shapes of the spirally wound metal tape in each instance the tapes are curved in cross section and the contiguous edges of the tape are united by a continuous spiral weld. This construction presents the advantage over other types of flexible metallic hose in that no packing is required for the reason that the contiguous edges of the spirally wound metal tape being united by a weld there are no open seams or interstices to be covered or closed and the hose is thereby continuous from end to end. By reason of this construction the hose can withstand enormous internal and

external pressures without a tendency to leakage while its subjection to high temperatures or sudden changes in temperature does not affect the flexible hose for the reason that the contraction and expansion of the metal cannot affect the hose to cause same to leak. These advantages are most material to this invention for by reason of this construction a flexible metallic hose can withstand equal pressures and temperatures as a rigid metal pipe.

Flexible metallic hose composed of spirally wound metal tape having their contiguous edges packed and mechanically connected together are old and well known and we lay no claim to this construction, so also is a rigid pipe formed spirally and having the edges of the spiral welded together old and well known and we lay no claim to the same.

What we do claim, however, and desire to secure by Letters Patent of the United States, is:—

1. A flexible metallic hose comprising a spirally wound metal tape, said spirally wound metal tape being curved in cross section, the contiguous edges of the said spirally wound metal tape being welded together.

2. A flexible metallic hose comprising a spirally wound metal tape substantially U-shaped in cross section, the contiguous edges of said spirally wound metal tape being welded together.

3. A flexible metallic hose comprising a spirally wound metal tape curved in cross section and a continuous spiral weld for

uniting the contiguous edges of the spirally wound metal tape.

4. A flexible metallic hose comprising a spirally wound metal tape curved in cross section, the contiguous edges of which tape are electrically welded.

5. A flexible metallic hose comprising a spirally wound metal tape curved in cross section and a spirally wound metal tape overlapping the contiguous edges of the first mentioned spirally wound metal tape, the last mentioned spirally wound metal tape being welded to the edges of the first mentioned spirally wound metal tape.

6. A flexible metallic hose comprising a plurality of alternating inwardly and outwardly extending folds substantially U-shaped in cross-section, the hose being made up of tubular sections the contiguous edges of which are welded together.

7. A flexible metallic hose comprising a plurality of alternating inwardly and outwardly extending metal folds substantially U-shaped in cross section, the edges of which are welded together.

In witness whereof we have hereunto signed our names this 8th day of March 1909, in the presence of the subscribing witnesses.

EMIL WITZENMANN.

EMIL STEIN.

Witnesses as to Emil Witzenmann:

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Witnesses as to Emil Stein:

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