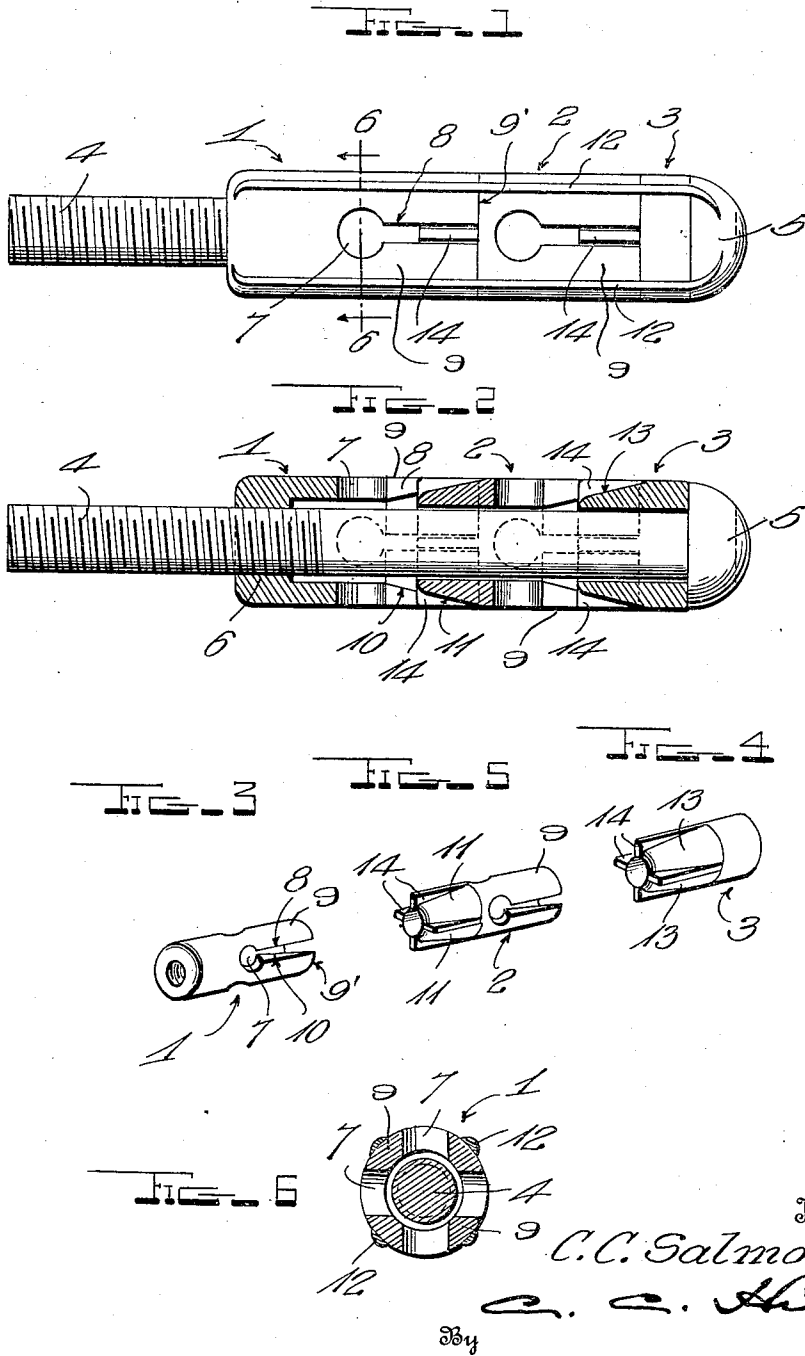


C. C. SALMONS.
EXPANSION BOLT.
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1,278,025.

Patented Sept. 3, 1918.



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EXPANSION-BOLT.

1,278,025.

Specification of Letters Patent.

Patented Sept. 3, 1918.

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To all whom it may concern:

Be it known that I, CLAUDE C. SALMONS, a citizen of the United States, residing at West Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Expansion-Bolts, of which the following is a specification.

My invention relates to expansion bolts, the object in view being to produce a convenient, efficient and practical expansion bolt made up of any desired number of sections, the majority of which are the exact counterparts of each other, each section embodying spreading means and also embodying portions adapted to be deflected or increased in diameter by the spreading means, whereby the bolt throughout practically its entire length is capable of being expanded so as to bind itself in the bore or hole in which it is placed.

The several sections of the bolt are combined with a screw which extends centrally and longitudinally through the sections of the bolt and has a threaded engagement with the terminal section at one end and a shouldered engagement with the terminal section at the other end, whereby in the tightening of said screw, the sections of the bolt are caused to exert a spreading pressure upon each other.

With these and other objects in view, the invention consists of the features of construction, combination and arrangement of parts hereinafter fully described and claimed, reference being had to the accompanying drawing, in which:—

Figure 1 is a side elevation of an expansion bolt embodying the present invention.

Fig. 2 is a longitudinal section through the same.

Fig. 3 is a perspective view of one of the terminal sections.

Fig. 4 is a similar view of the other terminal section.

Fig. 5 is a similar view of one of the several intermediate sections.

The expansion bolt contemplated in this invention comprises a plurality of sections 1, 2 and 3, 1 designating one of the end sections and 3 designating the other end section. As many intermediate sections 2 may be employed as may be found necessary to produce a bolt of the required length.

In conjunction with all of the sections I employ a central longitudinal screw 4 having

a head 5 of any suitable description. The terminal section 1 has its end closed with the exception of an internally threaded bore 6 which coöperates with the threads of the screw 4. The other terminal section 3 is provided with a smooth unthreaded bore so that the screw may turn freely therein while the head 5 of the screw bears against the outer end of said terminal section 3.

The terminal section 1 and each of the intermediate sections 2 are expandible in diameter and in order to obtain this, each of said sections is formed in the side walls thereof with a plurality of holes 7, each hole being intersected by a slot 8 which extends to the extreme edge 9' of the respective section. The fingers or portions 9 of each section lying between said holes 7 and slots 8 are thus capable of outward deflection and in order to produce the expansible action, each of said portions 9 is longitudinally beveled on its inner face as shown at 10, while the adjacent coöperating section is provided with a corresponding number of externally beveled faces 11 which coöperate with said internally beveled faces as the central screw is tightened, causing the sections of the bolt to ride one upon the other until the portions of the sections are pressed outward into engagement with the wall of the bore or hole in which the expansion bolt is inserted.

Primarily all of the sections are connected for transportation and rough handling by a plurality of longitudinally extending strips 12 preferably of some soft metal such as lead, said strips extending the entire length of the bolt and having the extremities thereof bent inwardly against the ends of the terminal sections of the bolt. This provides for a comparatively rough handling of the expansion bolt and the shipment and transportation thereof.

The terminal section 3 is not formed like the other sections with respect to the holes and slots in the side walls thereof. Said section 3 is however formed with externally beveled surfaces 13 to coöperate with the internally beveled faces of the adjacent section with which it coöperates. The terminal section 3 and the intermediate sections 2 are formed with ridges 14 which are slidable in the slots of the other sections thereby preventing relative rotative movement between the several sections of the expansion bolt. The longitudinally extending strips 12 may be allowed to remain on the expansion bolt

when the latter is inserted into the hole or bore therefor as they will serve to prevent the rotation of the expansion bolt in said hole or bore during the expanding operation. Said strips 12 may be held in position by being cast upon or cemented to the formed bolt or in any other suitable manner. When made of soft metal these strips may be left, as stated, upon the bolt when the latter is inserted in the bore, as said strips will bend to permit free expansion of the bolt sections and will serve as additional holding elements.

Having thus described my invention, I claim:

1. An expansion bolt embodying, in combination, a plurality of terminal and intermediate sections of hollow or tubular formation, an expanding screw extending centrally and longitudinally through all of said sections and having a threaded engagement with one terminal section and a head bearing against the outer end of the other terminal section, one of the terminal sections and each intermediate section being formed in the side walls thereof with a plurality of holes and also formed with longitudinally extending slots arranged through the edge of each of said sections and intersecting said holes, each of the sections having a beveled face which coöperates with a complementary beveled face on an adjacent section to effect a spreading of certain of such sections to an increased diameter.

2. An expansion bolt embodying, in combination, a plurality of terminal and intermediate sections of hollow or tubular formation, an expanding screw extending centrally and longitudinally through all of said sections and having a threaded engagement with one terminal section and a head bearing against the outer end of the other terminal section, one of the terminal sections and each intermediate section being formed in the side walls thereof with a plurality of holes and also formed with longitudinally extending slots arranged through the edge of each of said sections and intersecting said holes, each of the sections having a beveled face which coöperates with a complementary beveled face on an adjacent section to effect a spreading of certain of such sections to an increased diameter, each of said sections being further provided with a plurality of longitudinally extending external ridges movable in said slots to prevent relative rotative movement of the sections.

3. An expansion bolt embodying, in combination, a plurality of sections of hollow or tubular formation, an expanding screw extending centrally and longitudinally through all of said sections and having a threaded engagement with one terminal section and a

head bearing against the outer end of the other terminal section, one of the terminal sections and each intermediate section being formed in the side walls thereof with a plurality of holes and also formed with longitudinally extending slots arranged through the edge of each of said sections and intersecting said holes, each of the sections having a beveled face which coöperates with a complementary beveled face on an adjacent section to effect a spreading of the sections to an increased diameter, and retaining strips extending longitudinally of all of the sections and serving to tie said sections together.

4. An expansion bolt embodying, in combination, terminal sections, and an intermediate section, one of said terminal sections having a threaded opening for adjustable engagement with the bolt, and the other terminal section having a passage for sliding engagement with the bolt, one of said terminal sections being further provided with a series of internally beveled fingers and the other terminal section with an externally beveled end portion, and the said intermediate section being provided at one end with an externally beveled portion for engagement with said fingers of one terminal section and at the opposite end with a series of internally beveled spring fingers for engagement with the externally beveled portion of the other terminal section.

5. An expansion bolt embodying, in combination, a plurality of sections of hollow or tubular formation, said sections including terminal sections and an intermediate section, an expanding screw extending centrally and longitudinally through all of said sections, said screw having a threaded engagement with one of the terminal sections and a sliding engagement with the other terminal section and provided with a head bearing against the outer end of the latter named terminal section, one of the terminal sections being provided at one end with an internally tapered portion slotted to provide spring fingers and the other terminal section having a tapered end portion, and the said intermediate section being provided at one end with a tapered portion to engage the fingers of the first named terminal section and at its opposite end with an internally tapered slotted portion forming a series of spring fingers to engage the tapered end of the other terminal section, the externally tapered surfaces of the second named terminal section and the intermediate section being provided with externally formed ribs to engage the slots in the respective coöperating sections.

In testimony whereof I affix my signature.

CLAUDE C. SALMONS.