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WELL CASING JOINT

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Fig. 1

Fig. 2

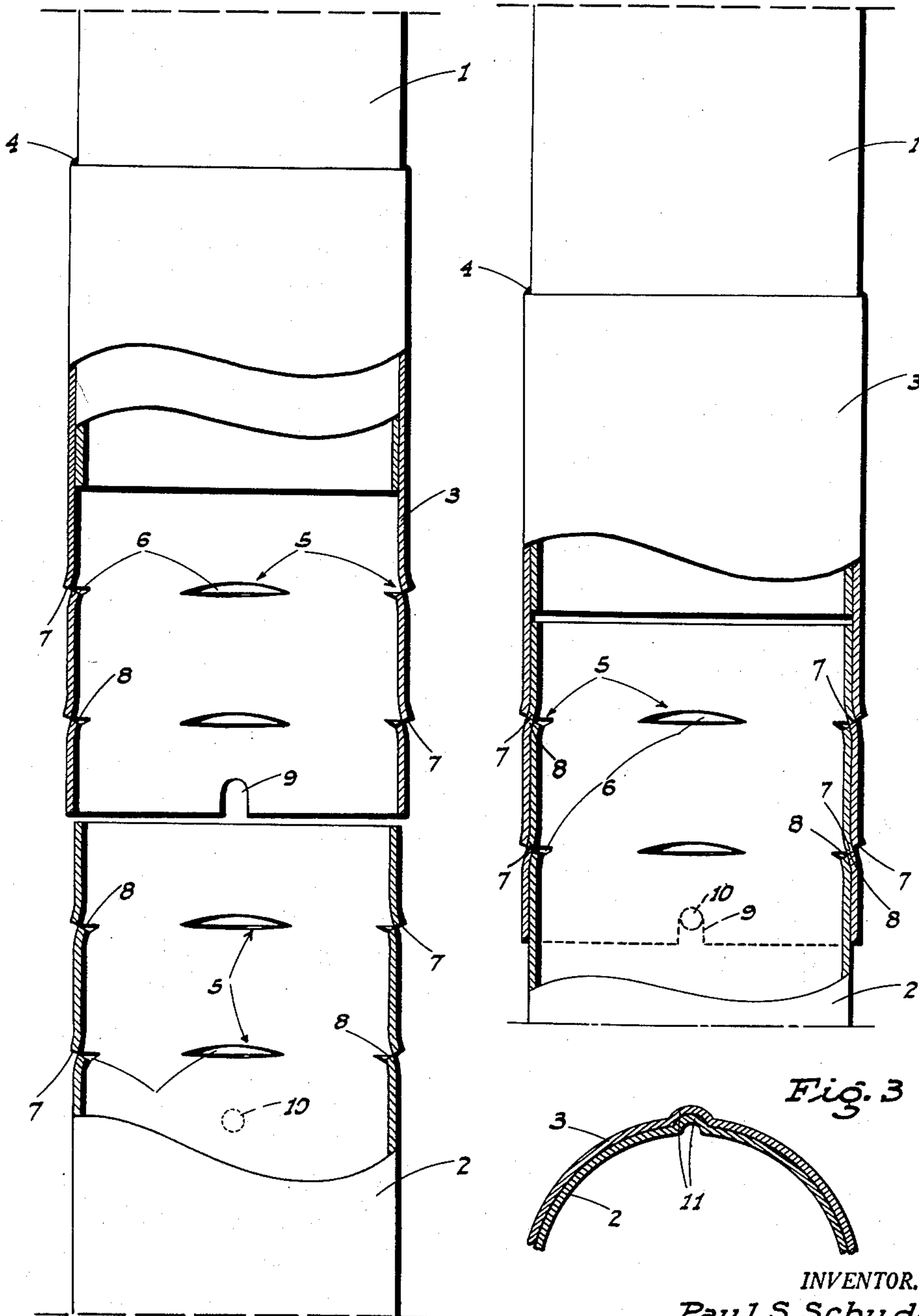


Fig. 3

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WELL CASING JOINT

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5 Claims. (Cl. 285—185)

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This invention relates to improvements in sheet metal, thin-wall type well casing.

One object of the present invention is to provide a quick-locking connection for use between adjacent sections of thin-wall well casing; the connection being arranged for coupling without the necessity of welding or riveting on the job.

A further object of the invention is to provide a quick-locking connection, for the purpose described, which is designed to be coupled by hand, and it requires no tools to accomplish the operation.

An additional object of the invention is to provide a quick-locking connection, for thin-wall well casing, which minimizes the labor required to secure a string of casing together for insertion in a well.

Another object of the invention is to provide a quick-locking connection, as above, which includes a novel snap action, self-locking assembly which becomes effective upon coupling of adjacent sections of the well casing; such assembly including means to prevent relative rotation of the sections when so coupled.

It is also an object of the invention to provide a quick-locking connection, for thin-wall well casing, which is designed for ease and economy of manufacture.

A further object of the invention is to provide a practical, safe, and reliable quick-locking connection, for thin-wall well casing, which will be exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings:

Fig. 1 is an elevation, partly in section, of a length of thin-wall well casing, showing adjacent sections as initially separate but in alignment preparatory to coupling the same.

Fig. 2 is a similar view, but shows the sections coupled.

Fig. 3 is a fragmentary cross section showing a modified form of rotation preventing means, as used in the connection.

Referring now more particularly to the characters of reference on the drawings, and at present to Figs. 1 and 2, the quick-locking connection is adapted to be employed between adjacent ends of sections 1 and 2 of sheet metal well casing of thin-wall type.

A coupling sleeve 3 is engaged for substantially one-half of its length in close fitting, tele-

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scopic relation over the end portion of the section 1 of the casing.

The coupling sleeve 3 is permanently affixed, at the time of manufacture of the casing, to the section 1, by any suitable means, such as welding, as at 4, or by riveting (not shown).

When the quick-locking connection is coupled, the initially projecting half of the sleeve 3 engages, for substantially its full length, with a close fit over the adjacent end portion of the section 2 of the casing.

The following quick-locking means is employed between the initially projecting half of the coupling sleeve 3 and the corresponding end portion of the section 2 of the casing:

Said initially projecting half of the sleeve 3 and the adjacent end portion of the section 2 are formed with a plurality of circumferential rows of equally spaced snap catches, indicated generally at 5; the corresponding snap catches 5 on each of said parts being positioned for matching engagement when the connection is in engagement.

Each snap catch 5 is formed by a circumferential slit 6; one edge of the metal along the slit being out-bent, as at 7, while the metal along the other edge is in-bent, as at 8. The out-bent edges 7 face away from the section 1, whereas the in-bent edges 8 face toward said section. This slitting and deforming of the metal to form the snap catches 5 is effected during initial manufacture of the casing and the quick-locking connection.

When the initially projecting half of the coupling sleeve 3 is engaged in telescopic relation over the adjacent end portion of the section 2 of the casing, the corresponding catches 5 snap into engagement with the out-bent edges 7 of the catches on section 2, abutting against the in-bent edges 8 of the catches on the coupling sleeve 3.

With the parts so coupled, the length of casing is effectively secured together; the coupling operation being one which can be accomplished by one man manually, and without the use of tools.

The snap catches 5 of each circumferential row thereof are in equally spaced relation, and to maintain matching snap catches 5 against separation by relative rotation of the sleeve 3 and section 2, the following rotation preventing means is employed:

At its initially free end the sleeve 3 is formed with a longitudinal, outwardly opening notch 9, which engages over a radially short, outwardly projecting rivet or pin 10 on the section 2 when the cooperating parts of said sleeve 3 and sec-

tion 2 are in telescopic engagement, as previously described.

It will be recognized that when the pin 10 is engaged in the notch 9, there can be no accidental relative rotation between said sleeve 3 and section 2.

In Fig. 3 there is illustrated a modification of a means employed to prevent relative rotation between the sleeve 3 and section 2; this modification comprising the following:

The sleeve 3 and section 2, at least at one point in the circumference thereof, have outwardly deformed, longitudinal ribs 11 thereon; such ribs being engaged in close fitting matching relation when the sleeve 3 and section 2 are telescoped for engagement of the corresponding snap catches 5. These cooperating ribs effectively prevent any relative rotation between the sleeve 3 and section 2 of the casing.

When a length of sheet metal well casing of thin-wall type is coupled together by the described quick-locking connection, it is effectively and safely maintained against separation by the snap catches 5, although if necessity demands, the connection can be separated by applying relatively heavy longitudinal force in opposite directions to the sleeve 3 and section 2.

From the foregoing description it will be readily seen that there has been produced such a device as substantially fulfills the objects of the invention, as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described the invention, the following is claimed as new and useful, and upon which Letters Patent are desired:

1. A quick-locking connection for coupling between a pair of sheet metal well casing sections in end to end relation, said connection comprising a coupling sleeve on and projecting axially beyond the end of one casing section, the adjacent end portion of the other casing section being adapted to telescopically engage in the projecting sleeve, and matching, self-locking catches on the engaging portions of the sleeve and said other section; said catches being of snap type, and each being formed by a single circumferential slit with the metal along opposite edges of the slit being out-bent and in-bent, respectively.

2. A quick-locking connection for coupling between a pair of sheet metal well casing sections in end to end relation, said connection comprising a coupling sleeve on and projecting axially beyond the end of one casing section, the adjacent end portion of the other casing section being adapted to telescopically engage in the project-

ing sleeve, and matching, self-locking catches on the engaging portions of the sleeve and said other section; said catches being of snap type, and each being formed by a single circumferential slit with the metal along opposite edges of the slit being out-bent and in-bent, respectively, the out-bent edges facing away from said one section and the in-bent edges facing toward said one section.

3. A quick-locking connection for coupling between a pair of tubular sheet metal well casing sections in end to end relation, said connection comprising a coupling sleeve on and projecting axially beyond the end of one casing section, the adjacent end portion of the other casing section being adapted to telescopically engage in the projecting sleeve, matching, self-locking catches on the engaging portions of the sleeve and said other section, and means between said engaging portions to prevent relative rotation of the sleeve and said other section.

4. A quick-locking connection for coupling between a pair of tubular sheet metal well casing sections in end to end relation, said connection comprising a coupling sleeve on and projecting axially beyond the end of one casing section, the adjacent end portion of the other casing section being adapted to telescopically engage in the projecting sleeve, matching, self-locking catches on the engaging portions of the sleeve and said other section, and means between said engaging portions to prevent relative rotation of the sleeve and said other section; said means including a notch in the free end of the sleeve and a pin on said other sleeve adapted to engage in the notch.

5. A quick-locking connection for coupling between a pair of tubular sheet metal well casing sections in end to end relation, said connection comprising a coupling sleeve on and projecting axially beyond the end of one casing section, the adjacent end portion of the other casing section being adapted to telescopically engage in the projecting sleeve, matching, self-locking catches on the engaging portions of the sleeve and said other section, and means between said engaging portions to prevent relative rotation of the sleeve and said other section; said means including longitudinal ribs on the sleeve and said other section in matching engagement.

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