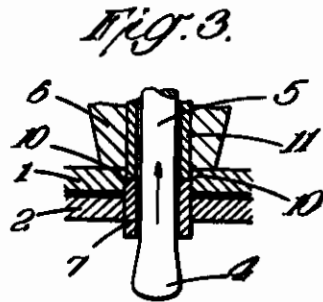
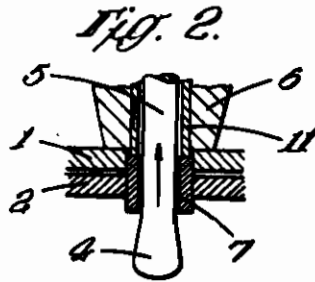
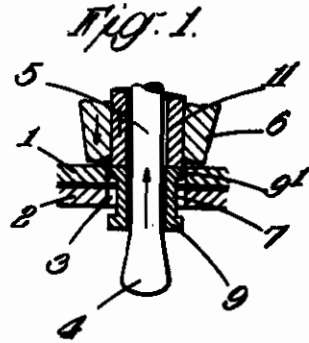


PUBLISHED  
JUNE 15, 1943.  
BY A. P. C.

J. F. G. CHOBERT  
METHODS OF FIXING TUBULAR RIVETS  
Original Filed Feb. 16, 1938

Serial No.  
286,713



Inventor  
Jacques F. G. Chobert  
by Wilkinson & Mawhinney  
Attorneys.

# ALIEN PROPERTY CUSTODIAN

## METHODS OF FIXING TUBULAR RIVETS

Jacques Francois Gabriel Chobert, Saint-Etienne, France; vested in the Alien Property Custodian

Application filed July 26, 1939

The present invention relates to a method of riveting in which a tubular rivet is upset by drawing through it from the tail end a mandrel having an enlarged head, an opposing pressure being applied to the head of the rivet.

An object of this invention is to ensure that the parts, for instance sheets, to be riveted are drawn tightly together and so held during the riveting operation.

The method of riveting according to the present invention comprises inserting in a hole in the parts to be riveted a mandrel having an enlarged head and a stem carrying a tubular rivet with an axially movable sleeve surrounding a part of said stem and forming an abutment for said rivet smaller in diameter than the hole in the parts to be riveted, disposing the rivet in the hole with its tail end beyond the parts to be riveted, initially maintaining the rivet in this position by means of said sleeve while withdrawing the head of the mandrel through the rivet whereby to upset said projecting tail end of the rivet, retracting the sleeve to allow the parts to be riveted to be drawn tightly together and finally drawing the head of the mandrel completely through the rivet.

The accompanying drawings illustrate by way of example applications of the method of riveting in accordance with this invention using two different forms of rivet.

In the drawings:—

Fig. 1 is a diagrammatic view in sectional elevation showing the use of a rivet having an external collar at each end;

Fig. 2 is a similar view showing the use of a plain tubular rivet; and

Fig. 3 is a similar view of a modification.

Referring to Fig. 1: it will be seen that the lower plate 2 is slightly separated from the upper plate 1 to which it is to be riveted.

The rivet 7 is placed on the mandrel 5 of a riveting machine having two abutments, the inner one in the form of a sleeve 11, being adapted to be extended beyond the outer abutment 6 by a distance exceeding the space that may exist between the plates to be drawn and secured together. The assembly is then passed through the hole 3 in the plates so that the lower collar 9 of the rivet 7 projects below the lower plate 2;

it is necessary for this purpose that the greatest external diameter of the rivet should be less than the diameter of the hole 3.

When the mandrel is drawn upward by the riveting machine the upper end of the rivet butts against the sleeve 11 allowing the head 4 of the mandrel to expand the lower collar 9, the external diameter of which is increased beyond that of the hole 3 provided in the plates.

The sleeve 11 is then released, and retracts within the outer abutment 6 which is pressed into contact with the plate 1. The mandrel draws up the rivet but, since the lower collar 9 has been expanded, it can no longer pass through the hole 3 in the plate 2, and consequently raises said plate and presses it tight against the plate 1.

While the two plates are pressed together the mandrel is drawn completely through the rivet, expanding the shank 7 to fill the hole 3 in the plates and then expanding the upper collar 9, causing it to grip the upper plate 1.

Fig. 2 shows an application of the invention in which the rivet is a simple tubular member, the head as well as the tail being deformed in the upsetting operation to secure the rivet.

The rivet 7 is threaded on the mandrel 4, the sleeve 11 bearing against the upper or head end of the rivet and the assembly is inserted into the hole in the plate 1, so that the lower portion of the rivet projects below the plate 2. Partial withdrawal of the mandrel then expands the tail of the rivet which extends below the plate 2.

When this portion of the rivet has been expanded, the sleeve 11 is released and is retracted within the outer abutment 6.

On continuing to ascend, the mandrel draws upward the rivet 7 and the plate 2, which is pressed against the plate 1. When the two plates are in contact the abutment 6 and sleeve 11 bear against the upper plate 1 and the rivet respectively; the mandrel is then drawn completely through the rivet 7 and both the stem and the head, thus securing it in position.

Fig. 3 shows a modified arrangement in which the upper plate 1 is countersunk as indicated at 10 to receive the expanded head end of the rivet. JACQUES FRANCOIS GABRIEL CHOBERT.