

# SCHNADT Henri

## (1909 - 1973)

### Rumelange

## Patents (details)

### 1 - Means for determining the brittleness of materials

GB patent 631449  
Application date 6 November 1945

In 1942 SCHNADT developed and patented a new type of specimen for determining the brittleness of materials in Belgium. He filed corresponding patents in additional countries only after WW II.

*Actually, most of the tests made to determine the brittleness take place by subjecting a sample provided, usually in its centre, with a notch intended to localise the section of rupture, to the shock of a knife, a measuring apparatus indicating the work absorbed on the rupture of the sample.*

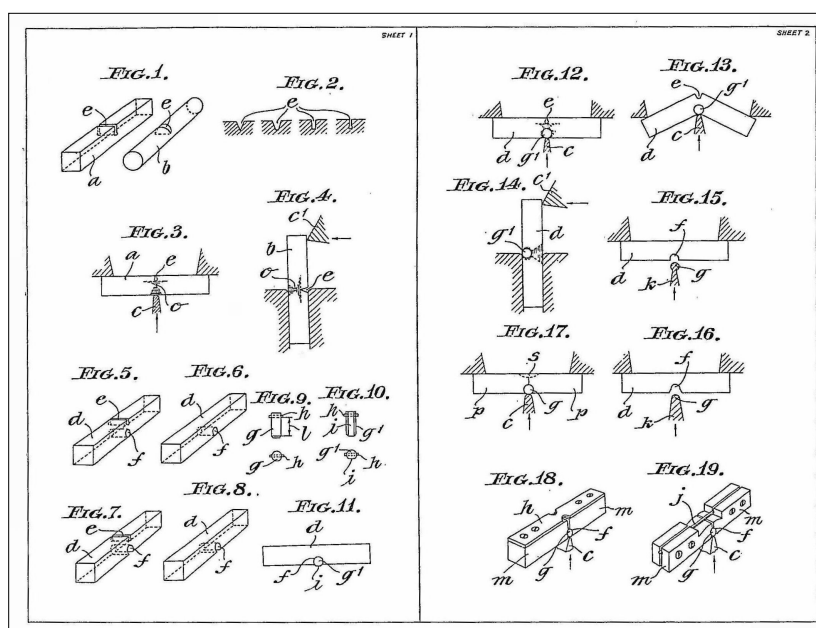
*It has been found that the existing samples and their method of rupture give rise to serious inconveniences which it has not yet been possible to eliminate; that in particular the results of tests instead of being constant for the same material, present considerable accidental disparities and that the rules of similarity are not applicable to test samples of different sections even if they are of the same type.*

*According to this invention, instead of allowing the material of the test sample to deflect on itself, that is to say, about an instantaneous axis of rotation located in the section of rupture, there is placed opposite the section or portion of the sample which will be stressed up to rupture, a guiding and stress controlling element or core which guides the movement of the material in the course of flexion, and forms an axis of rotation about which the section or portion ruptures mainly in tension with compression stresses confined mainly to the vicinity of the core. Thus the invention makes it possible to obviate or reduce the plastic deformations of compression ordinarily undergone by the material in the vicinity of the section of rupture.*

This type of specimens for use in determining the brittleness of materials became part of a standard test procedure which was known as the "Schnadt impact test".

### Corresponding patents:

BE, FR, DE, US



## 2 - Improvements in or relating to flange sections for welded plate girders

GB patent 716659  
Application date 9 May 1952

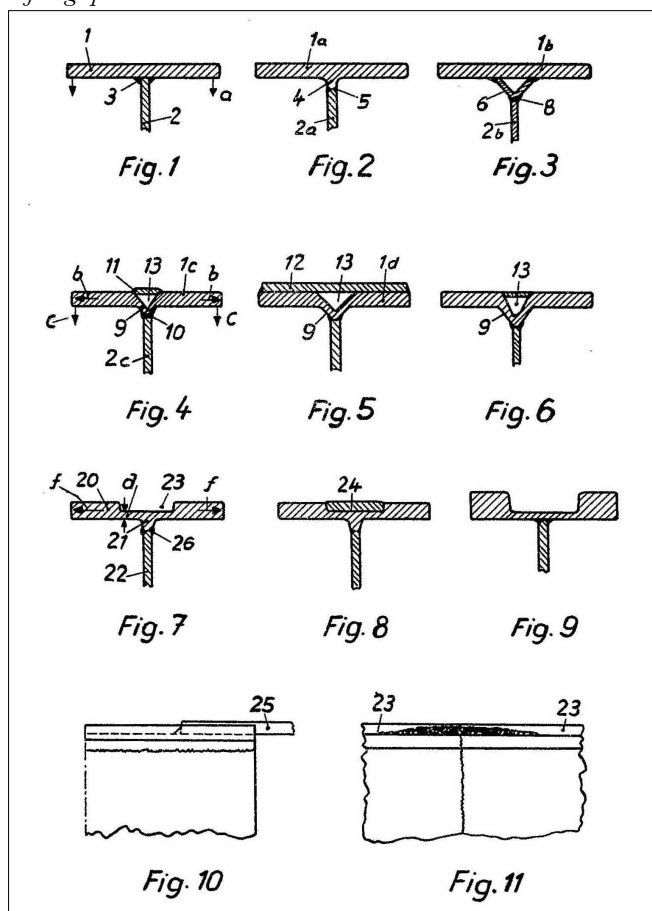
In 1951 SCHNADT filed a patent application in Germany which did not proceed to grant but which formed the base for filing corresponding patent applications in France and the UK. Contrary to the German application, the French and British applications were granted.

The invention concerned "Improvements in or relating to flange sections for welded plate girders". The introduction to the British patent specification is worded as follows:

*The present invention relates to a flange section for welded plate girders of steel or light alloy. Such a girder essentially comprises a web and two flanges, the latter being connected to the web by welding. The height and thickness of the web and flange may vary along the length of the girder so as to adapt the strength of the girder to the stresses operating at different points. For this reason, and also where girders of great length are necessary, the web and the flanges are often built up of separate pieces joined together by butt-welding. The most common form of such a plate girder is one in which commercial flat iron sections exhibit, however, various drawbacks in the welding process.*

*In order to eliminate these drawbacks, various flange sections and methods of joining have been disclosed of which the principal kinds are illustrated in the accompanying drawing and described in the following specification.*

*According to the present invention there is provided a girder of steel or light alloy, the girder in section comprising a flange part and a web part, wherein one of the faces of the flange parts is formed with a groove, the groove being longitudinal of the flange, and wherein one edge of the web part is both welded to the opposite face of the flange part.*



Corresponding patent:

FR

### 3 - Pendulum-actuated slow speed impact tester

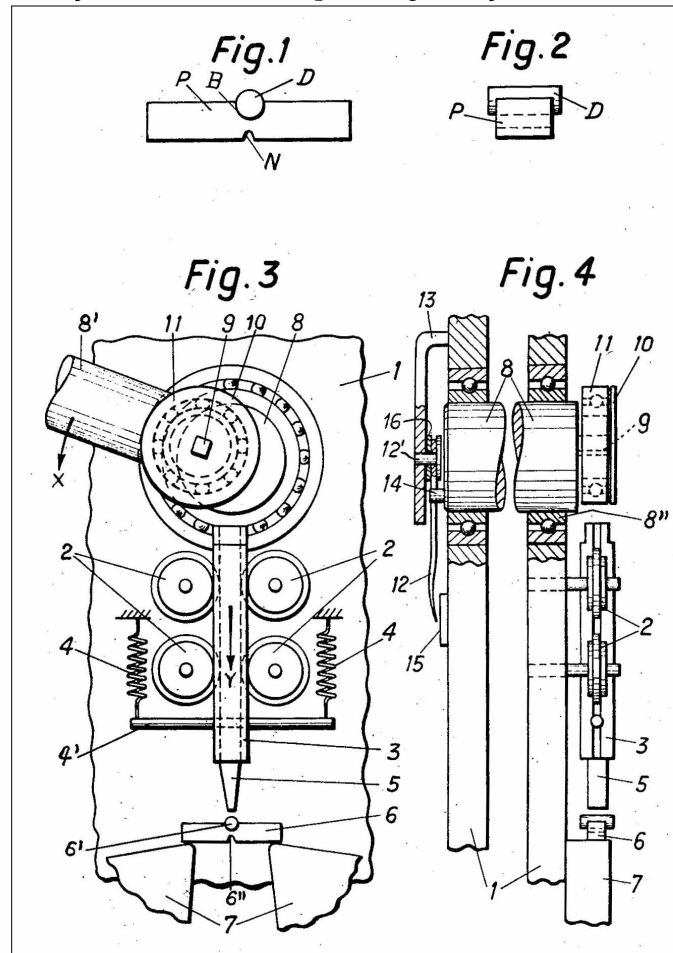
US patent	2803131
Application date	19 September 1955

In 1954 SCHNADT developed and patented a "pendulum-actuated slow speed impact tester" for use with the test specimens he had proposed in 1942. He described the apparatus as follows:

*In order to determine the effect of the speed of deformation, it is desirable to conduct the tests not only with an impact velocity of 5 meters per second usually employed with conventional pendulum-impact devices, but also with bending velocities or speeds the magnitudes of which are considerably smaller, for example, 10 to 100 times less. A speed of 0.1 cm/sec. is preferable.*

*With known pendulum-impact devices this can be obtained only by changing or regulating the distance of fall of the pendulum, i. e., by changing the potential energy of the pendulum. Thus, to decrease the bending velocity by a factor of 10, it becomes also necessary to decrease the distance of fall of the pendulum by a factor of 100, so as to reduce the potential energy by a factor of 100. However, this is unsatisfactory for test purposes, as known pendulum-impact devices do not permit such speed change or reduction.*

*In accordance with the invention, testing of the above described specimens is carried out with different bending velocities which is made possible due to the fact that the impact device is provided with an attachment or auxiliary member for performing slow speed bending tests. This auxiliary member is so driven or actuated by a pendulum arm or actuator that during the downward swinging movement of the pendulum arm attainment of bending speeds of considerably smaller orders of magnitudes than the peripheral velocity of conventional pendulum hammers is rendered possible, the work or output required for breaking the specimen then being measured by conventional indicating means operatively connected with the device.*



Corresponding patent

CH

#### 4 - Testing instruments with means for centering test bodies

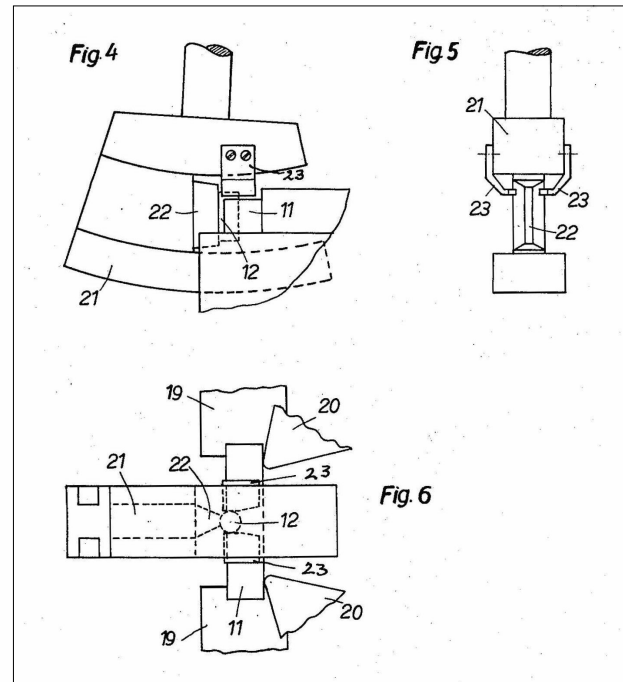
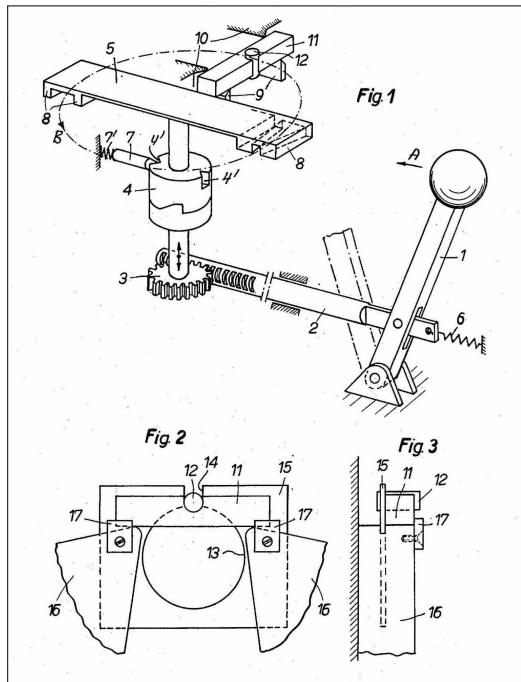
US patent 2842960  
Application date 19 September 1955

Concurrently with the above apparatus (Invention 3) SCHNADT also proposed an instrument for centring the "Schnadt-type" test specimens. He described the instrument in the following terms:

*It is of extreme importance, both in the case of pendulum impact devices or instruments of conventional construction and in the case of instruments which are provided with means for performing slow speed bending tests in accordance with my co-pending U. S. application Ser. No. 535,176, filed simultaneously herewith, now Patent No. 2,803,131, that the specimen or test body be accurately centered for testing purposes. Heretofore this has been accomplished by means of special, non-stationary centering gauges or devices.*

*Such procedure is, however, time-consuming, especially when in such tests an extraordinarily large number of specimens with different forms or types of notches are to be tested. In addition the specimens are also tested at high and low temperatures so that the time losses caused by the use of the aforesaid special centering devices become excessive because in the time interval so spent the temperature of the test body, which is taken from a very precisely adjusted heating or cooling device, is altered to a great extent.*

*The principal object of the present invention is there fore directed to means facilitating easy centering of Schnadt type specimens, as disclosed in my U. S. Patent No. 2,617,293, in pendulum impact devices. Means which are designed for centering the test body are arranged for coaction with at least one of the ends of a bending pin or element projecting beyond the sides of the specimen.*



#### Corresponding patents

DE, CH

Note:

The two Swiss patents, filed on 23 September 1954, were assigned to the company ALFRED J. AMSLER & Co in Schaffhausen, a company specialised, among others, in the manufacture of material testing machines (*Materialprüfmaschinen*).