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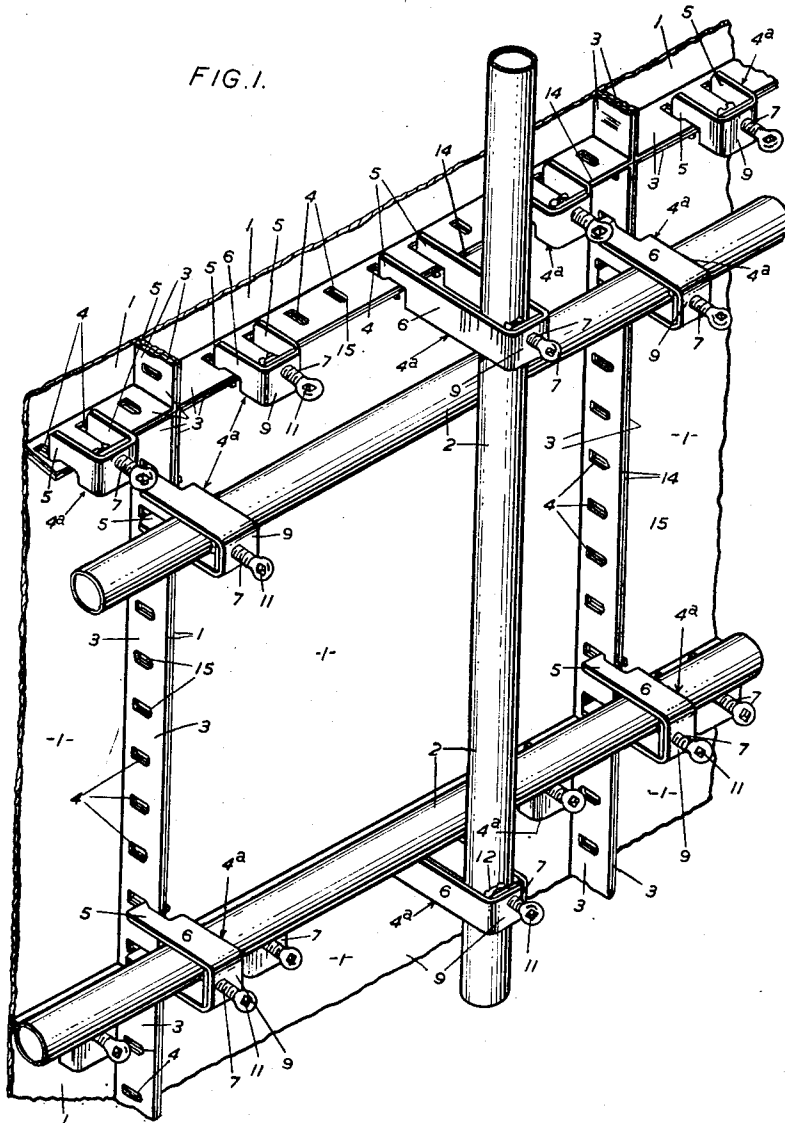
A. SUTCLIFFE

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CLAMP FOR ASSEMBLY OF TEMPORARY STRUCTURES

Filed Sept. 16, 1950

2 Sheets-Sheet 1



Alfred Sutcliffe
Inventor

By *Davidson*
his Attorneys

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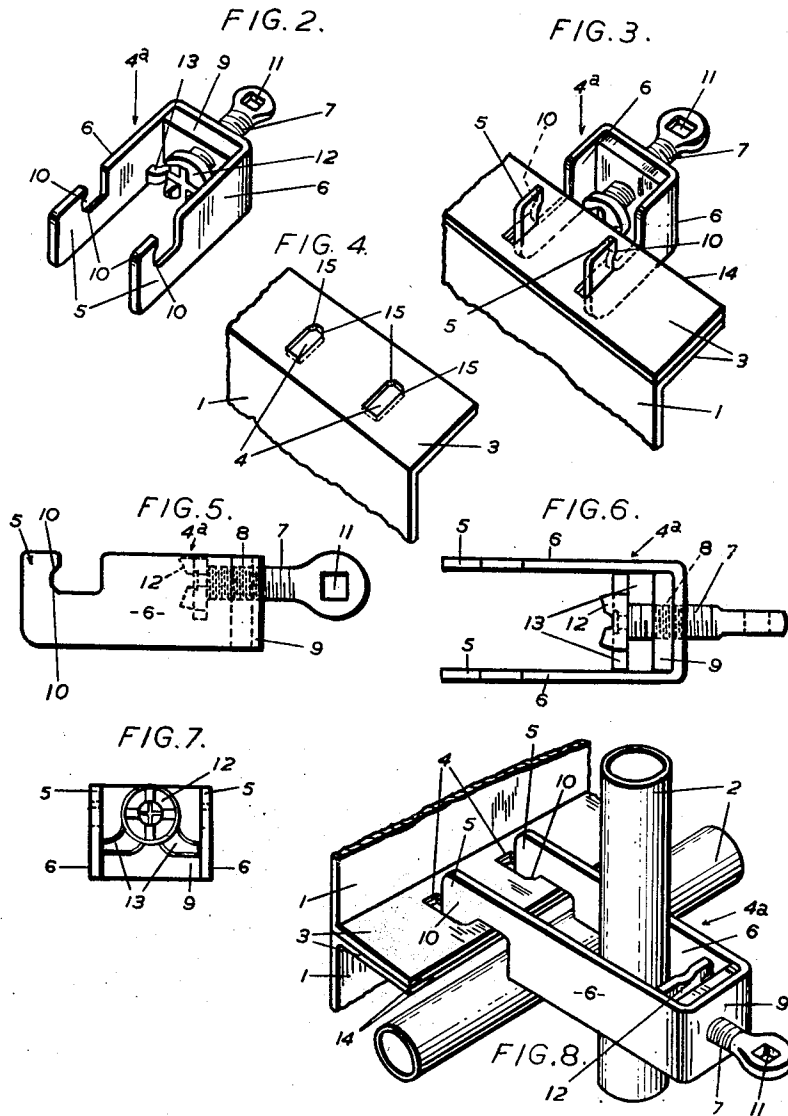
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Alfred Sutcliffe
Inventor

By
Richardson, David & Gordon
Attorneys

UNITED STATES PATENT OFFICE

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CLAMP FOR ASSEMBLY OF TEMPORARY STRUCTURES

Alfred Sutcliffe, Erdington, Birmingham, England, assignor to Rapid Metal Developments Limited, Birmingham, England, a British company

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2 Claims. (Cl. 144—297)

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This invention has reference to structural clamps particularly adapted for the assembly of shuttering for use in building concrete structures and is particularly concerned with clamps for the assembly of shuttering comprehending a plurality of sheet metal panels adapted to be assembled into a temporary cavity wall to be filled with concrete upon the setting of which the shuttering can be dismantled.

According to the present invention, metal shuttering for use in building concrete structures consists of several rectangular panels each having a right angular boundary flange with regularly spaced slots, the panels being erected longitudinally and vertically with their flanges mating and their slots in register, and the invention is particularly concerned with screw operated clamps having jaws engaging the mating slots and co-acting with the flanges and with scaffolding erected outside the panels in such a manner that upon tightening the screws the flanges are clamped in abutting relationship and the panels tied in alignment to the scaffolding.

According to a preferred form of the invention the jaws are provided with tapered throats which exert a wedging action on the slotted flanges so as to press them into physical engagement.

According to a preferred embodiment of the invention, the clamp comprises an elongated member which may be cut from flat strip stock and which is formed into a generally U-shaped configuration including a transverse web portion and two spaced parallel leg portions extending substantially perpendicularly from the web portion. Near their ends, the leg portions have lateral openings which communicate with tapered throat portions which extend convergently toward the ends of the leg portions so that the clamp may be hooked into aligned apertures in the flanges which are to be assembled and the tapered throat portions of the clamp may be enabled to exert a wedging action forcing the flanges into positive abutting engagement with each other. A flat rectangular nut member is disposed in engagement with the inner surface of the web member, the sides of the nut member engaging inner surfaces of the leg portions to prevent turning of the nut member relative to the U-shaped strap member. A tightening screw member is in threaded engagement with the nut member and extends outwardly through a central aperture formed in the web portion of the strip member, the inner portion of the screw member extending intermediate the leg portions of the clamp. On the inner end of the screw

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member, an abutment member is freely rotatably mounted, and the abutment member is provided with two laterally extending portions which engage opposed inner surfaces of the parallel leg portions of the clamp so that the abutment member will not rotate relatively to the clamp when the clamp is being tightened or loosened. Mutually perpendicular grooves are formed on the inner surface of the abutment member and are arranged to engage either a tube or other structural member straddled by the leg portions of the clamp or to engage the outer edges of the abutting flanges to which the clamp is applied.

Embodiments of the invention showing different uses and constructions of clamps are illustrated by way of example on the accompanying drawings:

Fig. 1 is a perspective view of shuttering erected using clamps according to the invention.

Fig. 2 is a perspective view drawn to a larger scale of a clamp for connecting the flanged, slotted panels together.

Fig. 3 is a perspective view showing the clamp (Fig. 2) clamping abutting flanges of adjoining panels.

Fig. 4 is a perspective fragment of a panel.

Fig. 5 is a side elevation of a clamp for tying the panels to scaffolding.

Fig. 6 is a plan view of Fig. 5.

Fig. 7 is an end view of Fig. 6.

Fig. 8 is a perspective view showing the clamp (Figs. 5-7) tying panels to a vertical tube of scaffolding.

Referring to Fig. 1, a tubular, steel scaffolding comprises uprights and longitudinals 2 rigidly connected together and erected on the site where it is intended to build a concrete wall with use of metal shuttering. This is a simple form of scaffolding commonly employed but a scaffolding wholly or partly of I section members can be employed. The shuttering consists of several rectangular sheet steel panels 1 having boundary flanges 3 set at a right angle to the plane of the panel. Each flange 3 is provided with several slots 4 spaced at uniform distances so that the slots 4 of any flange 3 can be brought into register with those of another panel when shuttering is built up into the form of a temporary wall of which one side of a wall is shown in Fig. 1. This is simply done by arranging the panels 1 longitudinally and vertically in a common plane with their slotted flanges 3 in abutting and registering relationship and as the process of erection continues the flanges 3 are clamped together and tied to the scaffolding 2. For building a con-

crete wall, the panels 1 will be erected in laterally spaced relationship so as to form a rectangular well which is filled with concrete.

The clamps embodying the invention and designated generally as 4a are shown securing the shuttering panels 1 to the tubular members 2 of the scaffolding and holding abutting flanges 3 in engagement with each other. The parallel leg portions 6 of each clamp have lateral apertures which communicate with tapered throat portions 10 extending convergently toward the ends of the leg portions, thus forming hook shaped ends 5 which may be engaged in the slots 4 of the shuttering flanges 3. The clamp 4a is shown made of flat strip material formed into a generally U-shaped configuration with the spaced parallel leg portions 6 extending substantially perpendicularly from the transverse web portion 9. A flat rectangular nut 8 bears against the inner surface of the web portion 9 and its lateral edges engage inner surfaces of the leg portions 6 for preventing the nut 8 from turning with respect to the clamp 4a. A tightening and loosening screw member 7 extends inwardly intermediate the leg portions 6 of the clamp in threaded engagement with the nut 8.

The screw member 7 extends outwardly through an aperture in the web portion 9 and its outer end terminates in a flattened portion having an aperture 11 formed therein to receive a rod (not shown) for tightening or loosening the clamp. Freely rotatably disposed on the inner end of screw member 7 is an abutment member 12 provided with laterally extending portions or horns 13 adapted for longitudinal sliding engagement with opposed inner surfaces of the leg portions 6 of the strip member for preventing rotation of the abutment member 12 with respect to the clamp 4a. Mutually perpendicular grooves are formed on the end surface of the abutment member 12 and are adapted for engagement either with a tubular member 2 which is straddled by the leg portions 6 of the clamp, or alternatively, for engagement with adjacent edges of abutting flanges 3 held together by a clamp 4a as shown in Fig. 1 of the drawing. The lateral projections 13 of the abutment member 12 assure proper alignment of the mutually perpendicular grooves as the clamp is applied and gradually tightened or is loosened by turning screw member 7.

From the foregoing, it will be seen that the clamp according to the invention is extremely economical to manufacture, since the U-shaped member may be formed from strip stock and the hook shaped jaws 5 produced in a punch press. The nut 8 may be cut from bar stock and conveniently threaded. Since the nut 8 bears against the web portion 9 of the clamp, the means for securing the nut 8 in the clamp is not required to be stressed when the clamp is tightened.

The clamp 4a and its screw and floating seating being a unit provides an important advantage in the rapid assembly and dismantling of shuttering since the absence of loose parts saves erector's time and enables unskilled labour quickly to learn and carry out simple erection instructions.

Referring to Fig. 8, it illustrates on a large scale a simple arrangement of clamping together slotted flanges 3, 3 lying in a horizontal plane and for tying the panels to a vertical member of the scaffolding 2 and identical clamps are employed and operate in the same manner where the slotted flanges 3, 3 lie in a vertical plane and

are tied to a horizontal member of the scaffolding 2 as seen at Fig. 1.

What I claim is:

1. A clamp of the class described, comprising: an elongated member formed into a generally U-shaped configuration and including a transverse web portion and two spaced parallel leg portions extending substantially perpendicularly from said web portion, said leg portions having lateral openings formed therein, said lateral openings communicating with tapered throat portions extending convergently toward the ends of said leg portions to form hook-shaped end portions of said leg portions, said web portion having a central aperture formed therein; threaded means associated with said aperture; a screw member passing through said aperture and engaging said threaded means, said screw member extending inwardly intermediate said leg portions and outwardly beyond said web portion, said outwardly extending portion being shaped for engagement with tightening and releasing means; and an abutment member freely rotatably disposed on the inner end of said screw member, said abutment member comprising laterally extending portions adapted for longitudinal sliding engagement with opposed inner surfaces of said leg portions for preventing rotation of said abutment member relative to said clamp.

2. A clamp of the class described, comprising: an elongated flat strip member formed into a generally U-shaped configuration and including a transverse web portion and two spaced parallel leg portions extending substantially perpendicularly from said web portion, said leg portions having lateral openings formed therein, said lateral openings communicating with tapered throat portions extending convergently toward the ends of said leg portions to form hook-shaped end portions of said leg portions, said web portion having a central aperture formed therein; a nut member disposed in engagement with said web portion and having a threaded opening formed therein in alignment with said central aperture in said web portion, said nut member having lateral surfaces disposed for engagement with opposed inner surfaces of said leg portions adjacent to said web portion for preventing rotation of said nut member with respect to said clamp; a screw member extending intermediate said leg portions in threaded engagement with said nut member and extending outwardly through said central aperture in said web portion, said outwardly extending portion being shaped for engagement with tightening and releasing means; and an abutment member freely rotatably disposed on the inner end of said screw member, said abutment member comprising laterally extending portions adapted for longitudinal sliding engagement with opposed inner surfaces of said leg portions for preventing rotation of said abutment member relative to said clamp.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
275,881	Brastow et al. -----	Apr. 17, 1893
884,772	Sorensen -----	Apr. 14, 1908
999,174	McGill -----	July 25, 1911
1,119,712	Meserve -----	Dec. 1, 1914
1,787,799	Soule et al. -----	Jan. 6, 1931
2,017,553	Troiel -----	Oct. 15, 1935