Jan. 18, 1944. A. H. PARCHER 2,339,515

SPLINT

Filed May 7, 1942

Fig. 1

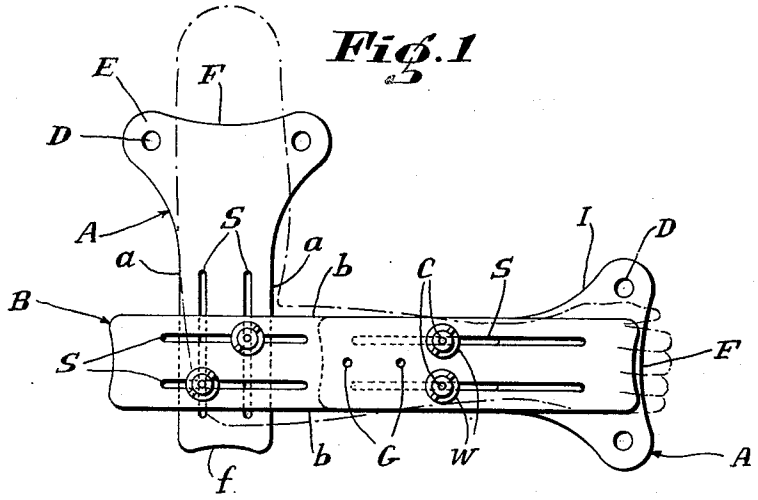


Fig. 2

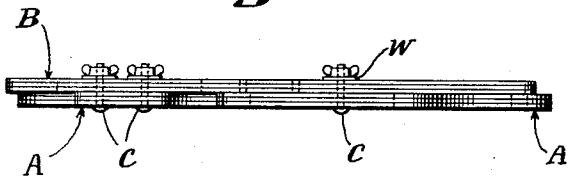


Fig. 3

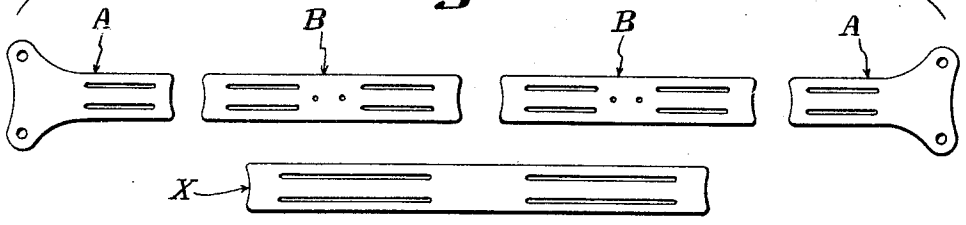


Fig. 4

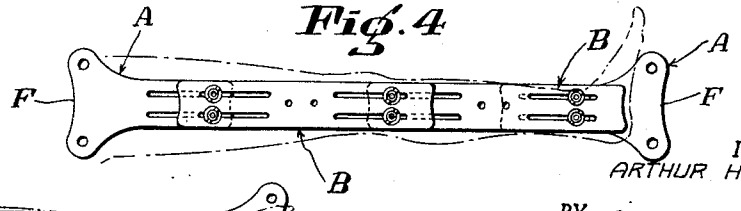
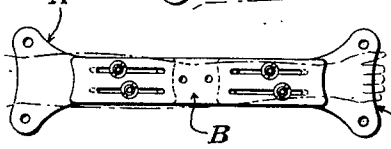


Fig. 5



INVENTOR.
ARTHUR H. PARCHER

BY Spear, Rawlings & Spear.

ATTORNEYS

Patented Jan. 18, 1944 2,339,515

UNITED STATES PATENT OFFICE

2,339,515

SPLINT

Arthur H. Parcher, Ellsworth, Maine

Application May 7, 1942, Serial No. 442,016

7 Claims. (Cl. 128—84)

The present invention represents an effort to make possible a first-aid splint that will provide a practical basis for emergency treatment of both arm and leg fractures. Its concept includes that of an adjustable splint capable of various combinations and arrangements within the usual experience or skill of the first-aid worker and is based on a simplicity permissive of its satisfactory production at low cost.

There are, of course, a number of excellent splints on the market rated as emergency splints, but they are really for those of rather advanced knowledge and experience and are expensive.

To make possible a reasonable basis of emergency supply I have provided a simple flat wooden splint capable of production on such inexpensive basis that they may be manufactured and distributed to proper first aid or like organization for practice and custody against a more serious call for actual casualty use.

The manufacture of splints according to my invention may be carried on locally in simple carpenter shops or mills not engaged in defense work, if need be.

As my disclosure is directed to a class of skilled or trained workers, I will show and describe a splint according to my invention with only sufficient suggestion as to use to make its pertinence obvious to those charged with such advice or instruction in the use of emergency equipment.

The drawing shows a practical form of my invention without intent to be limited thereby.

In the drawing:

Fig. 1 is a plan view of a splint according to my invention for bent arm set.

Fig. 2 is an edge view of such a splint.

Fig. 3 indicates on smaller scale a set of splint members well adapted to general first aid use.

Fig. 4 indicates selected member in a leg setting, and

Fig. 5 shows a splint pair for straight arm set.

While the unitary parts herein shown and described are useful singly or with another in some simple emergency treatment or in the practice drills in which the worker is progressively trained, it may be considered that my splints are based primarily on a pair of relatively adjustable related members of different contours. As will be obvious to those having had such first aid training or other study or experience along such lines of preparation for defense or local disaster, such a unit can be variously utilized or combined with other units or parts of units.

The splint shown in the drawing may be produced on an inexpensive but highly efficient basis. The particular splint selected for illustration is made of ⅜" plywood which is strong, yet light and inexpensive. By using a stock in which the fibres of its composition have crossed relations, splitting is avoided. Two slots S and ¼" carriage bolts C with large washers W are used for clamping strength. Such a splint consists of two dissimilar contoured sections, the crutch-type end portion A being usually made 12" in length, 3½" wide at the smaller end, and 7½" wide at the larger end. Another section indicated as B is preferably 20" in length with substantially parallel edges *b*. By clamping the splint sections together through the double parallel pairs of slots S with any ordinary bolt, such for example as is commonly called a carriage bolt C with its wing nut, the splint sections can be fixed firmly in alinement or at relative angles up to 90° which permits a bent arm set as indicated in Fig. 1.

Large washers W are used to get increased bearing. Such a section as B also preferably has a pair of clamp receiving holes G symmetrically spaced longitudinally midway of the unheaded member and preferably between longitudinal pairs of slots. The transverse relative spacing of the longitudinal hole pair G provides for a rigid clamping of the members at right angles to each other.

Such a splint can be used not only for simple splintage, but also for fixed traction, and is adjustable as to length and angle without removing the bolt.

Where the splint is applied to an arm bent as in Fig. 1 or straight as in Fig. 5, the crutch-type end which has a slight concavity as at F is padded and held in the axialla by a folded cravat or other fastening threaded through holes D in the wings E crossed over the shoulder of the patient and tied under the opposite shoulder. The splint can thus be fixed at any desired angle for settings as above explained and the slots and clamp both permit adjustment to the size of the patient.

Fixed traction may be applied by means of a traction hand hitch. These are well known and need no illustration. The traction bands are carried over the concave end F of the splint, wrapped about the splint and tied. In use the splints should be padded as in usual practice.

My splints may be applied to the leg in a similar manner, the additional length if needed being obtained by the addition of another 20" section as indicated at B or by using the base A and a 36" section X generally like B in construction,

but longer. (Fig. 3.) Such sets therefore provide for two main combinations for leg fractures, i. e. the simple plain ended splint as well as the double crutch end set up suggested in Fig. 4.

The splint also may be applied to the outer side of the leg, obtaining the base against which traction is made by means of a folded cravat placed around the thigh, pulled snugly into the crotch, passed through the holes D in the splint and tied loosely. An inside or outside supporting splint may be added or the legs bound together.

When traction for the leg is not needed, a very satisfactory splintage is obtained by using two splints, each consisting of one 20" section B and two 12" sections A (see Fig. 3). The splints are rolled toward each other in a folded blanket until a trough is made. The leg is thus supported on the blanket between the well padded splints which are retained by wrapping with a bandage or by cravat bandages. This suspends the leg above the floor.

My splint is an improvement on the old board splints and is adaptable to many and various combinations. There is preferably the 12" base part A, the 20" section B. A 36" section X (Fig. 3) can be provided in place of two 20" sections for the leg so as to make a more comprehensive set, as above indicated, and one which will serve both arm and leg cases.

It is to be understood that the dimensions cited are illustrative and in no way to be construed as pointing to limitation. The dimensions given are for a splint or splint set found through practical tests of height efficiency, lightweight and yet of ample strength.

The member A preferably has parallel sides *a* for its shank with its ends cut at substantially right angles giving parallel end faces but these as well as the squared end of the shank portion of member A may be slightly concaved as at *f*. Such shank end concavity is preferably of considerably shorter radius than that of F which provides for a smooth sweep between the crutch end wings E in which the fastening holes D are provided (see Fig. 1).

Such a wing end E is preferably finished with a rounded point centered on the center of the hole D and in practice merges in a reversed curvature I which stream lines it with the parallel sides *a* of the shank portion of A.

The forms shown and discussed are of proven utility and represent contours well adapted for inexpensive production from available stocks and fittings so that they do not require any material preferences for manufacture. I have previously referred to the stock as composite, it being understood that plywood, fibre-board or like strong light materials of fibrous ply-grain or in mixture are strong, light and free from splitting tendencies. The carriage bolts with washers afford with the parallel slots inexpensive and efficient clamping means.

The outlines of the members may of course be varied but those shown will be found to represent very careful scientific layouts based on anatomical demands and surgical potentialities.

What I therefore claim and desire to secure by Letters Patent is:

1. In an emergency splint, a pair of relatively thin flat faced members of rigid stock including longitudinal slotted shank portions adapted to be interengaged for parallel assembly in relatively longitudinal adjustments, one of said members having a relatively wide head end having a slight end concavity, said shanks having parallel longitudinal slots and clamping means adjustably disposable through said slots to hold said splint members in desired relative position when in use.

2. In an emergency splint, a pair of relatively thin flat faced members of rigid stock including longitudinal slotted shank portions adapted to be interengaged for parallel assembly in relatively longitudinal adjustments, one of said members having a relatively wide head end having a slight end concavity and a pair of lateral holes for flexible fastening of the headed members, said shanks having parallel longitudinal slots and clamping means adjustably disposable through said slots to hold said splint members in desired relative position when in use.

3. A splint as in claim 1, in which the clamping means are freely slidable in the parallel slots of their respective members to be clamped, whereby secancy of the parallels of said slots may be maintained on angular dispositions of said splint members.

4. A splint pair as in claim 1, in which the unheaded member has a pair of clamp receiving holes symmetrically spaced transversely midway of its ends at the distance of the spacing of the longitudinal slot centers.

5. An emergency splint set comprising thin flat faced members of rigid stock having parallel pairs of longitudinal slots for clamped assembly including a square ended substantially parallel sided unit and a pair of extension units assemblable thereon in clamped selected disposition, said extensions comprising a slotted shank portion having a relatively wide head end having a slight end concavity and clamps engageable through said slots of said members.

6. An emergency splint for arm or leg fractures comprising at least two flat faced members of stiff stock, each of said members having a pair of longitudinally disposed slots spaced to define with the slots in the other of said members a pair of assembly apertures when said members are superposed, a manually adjustable clamp extending through each of the thus established assembly apertures providing a sliding interconnection permitting the extension of said splint and said members to be angularly disposed, said clamp members being adjustable to lock said members in any selected position, at least one of said members having at least one of its ends formed for patient contact and to receive fixation bands or the like.

7. A splint as in claim 1 in which the relatively wide head end is formed with laterally spaced apertures.

ARTHUR H. PARCHER.