

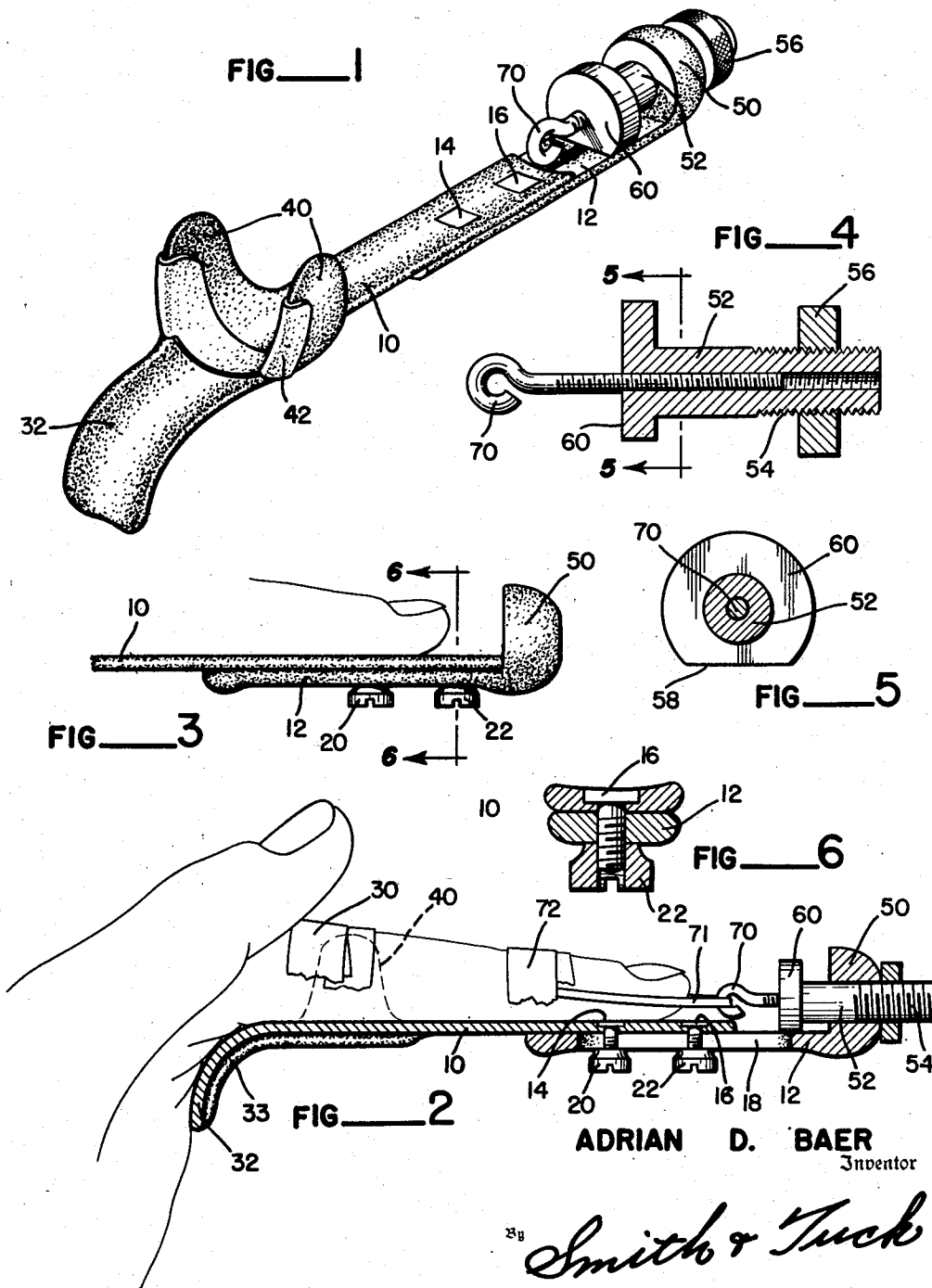
July 28, 1953

A. D. BAER

2,646,794

ADJUSTABLE SURGICAL FINGER SPLINT

Filed Oct. 9, 1951



UNITED STATES PATENT OFFICE

2,646,794

ADJUSTABLE SURGICAL FINGER SPLINT

Adrian D. Baer, Seattle, Wash.

Application October 9, 1951, Serial No. 250,523

5 Claims. (Cl. 128—85)

1

My invention relates to surgical splints, and, more particularly, to an adjustable surgical finger splint. Briefly, the splint includes two splint members having their inner ends juxtaposed and forming an extensible splint to fit different length fingers. At one end of the splint is a crutch end disposed to bear on the fleshy portion of the palm adjacent the knuckle of an injured finger positioned on the splint. The other end of the splint has adjustable means for securing tension means and adjusting traction on the injured finger.

In forming a splint for a finger, an important object is to provide adequate securing means for the end of the splint near the knuckle so that the digit may be maintained in longitudinal traction while the broken phalanx heals. Convenient means should be provided for applying and adjusting the traction. At the same time, the splint should be formed with consideration for the comfort of the patient and for the usefulness of the hand. As fingers vary in length, a splint should be adjustable so that it may be used for digits of various lengths.

The objects of my invention include, therefore, to provide a finger splint with special provision for adequate securing of the end of the splint near the knuckle, to devise means for conveniently applying and adjusting the traction, to provide maximum protection of the injured digit while avoiding unnecessary encumbrance so that the hand may be useful, to devise a splint which will protect the injured finger and which will be comfortable to the patient, and to provide a splint which is adjustable for various lengths of fingers.

Further objects, advantages and capabilities will be apparent from the description and disclosure in the drawings, or may be comprehended or are inherent in the device.

In the drawings:

Figure 1 is a perspective view of a splint which is a specific embodiment of my invention;

Figure 2 is a side view of the splint, partly in section, and shown as it appears in use on an injured digit;

Figure 3 is a side view of part of the assembly as it would appear when used as a protective rather than a traction device;

Figure 4 is a side view, partly in section and enlarged, of the traveler and screw eye portion of the device;

Figure 5 is a cross-sectional view taken on line 5—5 of Figure 4; and

Figure 6 is a view, partly in section and enlarged, taken on line 6—6 of Figure 3.

2

The splint has a first and a second splint member, 10 and 12 respectively. These are preferably made of somewhat malleable material so that the splint can be shaped to fit a particular hand if necessary. At the same time, the material must be rigid enough to withstand the forces applied thereon in placing a finger in traction. The inner ends of the splint members are juxtaposed and are slidable longitudinally of each other, thereby forming an extensible unit to accommodate various lengths of fingers.

Means of securing the splint members together include openings in first splint member 10 and square headed bolts 14 and 16. Splint member 12 has a slot 18 in which the bolts are positioned and slotted nuts 20, 22 complete the assembly.

As shown in Figure 1, the upper face of splint member 10 is concave transversely to accommodate the shape of the finger positioned thereon. The finger is taped to the splint as partially shown at 30 in Figure 2 and this is a primary means of securing the splint to the finger including the prevention of longitudinal movement. In preventing such longitudinal movement it acts in two ways, in directly securing the finger to the splint and in positioning curved crutch end 32 in position to act as securing means. Crutch end 32 bears on the fleshy portion of the palm near the juncture of the injured digit and the metacarpus, and the crutch end is designed to closely fit this portion. This crutch end should be distinguished from a splint end resting on the center of the palm because such a palm rest requires that the finger be maintained at an angle to the surface of the palm if the rest is to maintain its function. With the present device, the finger can be substantially straightened without dislodging crutch end 32. Crutch end 32 is strengthened by rib 33 on its lower surface.

Wings 40 are positioned adjacent curved crutch end 32 and lie at either side of the finger. The edges of the wings adjacent the knuckle may bear on the crotch between the injured finger and adjacent fingers. To avoid discomfort in this regard, resilient pad 42 is positioned on these edges and runs across the first splint member 10. It will be seen that means has been provided for adequately securing the splint while providing for minimum encumbrance of the hand and with due consideration to comfort.

The outer end of second splint member 12 has a boss 50 disposed in line with the injured digit. Boss 50 is of large size and will protect the finger even if the splint is used only as a protective device, rather than a traction device, as shown in

3

Figure 3. When the splint is used for longitudinal traction, boss 50 provides, in addition to its protective function, a bearing for traveler 52. The major portion of traveler 52 is rod shaped and has threads 54. Nut 56, preferably having a knurled surface, is positioned on the outer end of traveler 52 and provides means for making fine adjustments of the position of traveler 52, and consequently of the amount of traction on the finger. Traveler 52 is held from rotation, as nut 56 is tightened, by a straight edge 53 of flange 60 abutting the adjacent surface of splint member 12.

Traveler 52 has a screw eye 70 positioned in a threaded bore. Traction is usually applied on the finger by means of a rubber band 71 taped to the finger, as shown at 72 in Figure 2, and hooked on screw eye 70.

In placing the finger on the splint, first and second splint members 10, 12 are adjusted to the length of the finger and secured in their relative position by tightening nuts 20 and 22. Then the crutch end 32 is positioned firmly in place and secured by tape. Screw eye 70 is disposed generally in the position it is to occupy in traction; and then rubber band 71 is hooked on the screw eye. It may be found that more or less pressure is required and this may be closely adjusted by means of traveler 52 and nut 56 without appreciably disturbing the positioning of screw eye 70 and band 71. On later examination of the finger during convalescence it may be desired to change the tension on the band and this may be conveniently accomplished by means of traveler 52. By these means, the traction applying members may be conveniently adjusted to the finger in first roughly approximating the desirable positioning and in later making an exact application of traction. Because the traveler does not rotate, the positioning of the screw eye is not disturbed during final adjustment and the splint should be successfully applied in one operation. This is to be contrasted with other systems where the splint is often applied several times before a satisfactory adjustment is achieved or where the doctor has to be satisfied with a general approximation of the desired degree of traction. The present adjustable finger splint is both time conserving and sparing of discomfort to the patient.

It is believed that it will be clearly apparent from the above description and the disclosure in the drawings that the invention comprehends a novel construction of an adjustable surgical finger splint.

Having thus disclosed the invention, I claim:

1. An adjustable finger splint, comprising: first and second elongated splint members, said splint members having their inner end portions juxtaposed and being slidable longitudinally of each other whereby they form an extensible unit; adjustable means securing said splint members together; one side of said first splint member forming a rest to accommodate an injured finger; said first splint member having means for securing the same to such injured finger adjacent to the knuckle joint; the outer end of said second splint member having a large boss extending laterally to lie at the end of such injured finger; said boss having an opening therethrough and a rod shaped traveler positioned in said opening to move longitudinally of said splint members, said traveler having a flange on its inner end having an edge abutting the adjacent portion of said second splint member and preventing rotation of said traveler; said traveler having a threaded

4

bore and screw eye positioned in said bore to which tension means can be fastened for traction of such injured finger; and the outer end of said traveler being threaded and a nut positioned on the same and abutting said boss for moving said traveler longitudinally of said splint members.

2. An adjustable finger splint, comprising: first and second elongated splint members, said splint members having their inner end portions juxtaposed and being slidable longitudinally of each other whereby they form an extensible unit; adjustable means securing said splint members together; one side of said first splint member forming a rest to accommodate an injured finger and the outer end of said first splint member having a crutch end curving towards the opposite side from said rest and disposed to bear on the fleshy portion of the palm immediately adjacent to the knuckle joint of such injured finger; a pair of wings positioned on said first splint member adjacent said curved end and extending from the edges of said rest to lie on either side of such injured finger, each wing being in position to bear on the crotch between such injured finger and an adjacent finger; the outer end of said second splint member having a large boss on one side positioned to lie at the end of such injured finger; said boss having an opening therethrough and a rod shaped traveler positioned in said opening to move longitudinally of said splint members, said traveler having a flange on its inner end having an edge abutting the adjacent portion of said second splint member and preventing rotation of said traveler; said traveler having a threaded bore and a screw eye positioned in said bore to which tension means can be fastened for traction of such injured finger; and the outer end of said traveler being threaded and a nut positioned on the same and abutting said boss for moving said traveler longitudinally of said splint members.

3. An adjustable finger splint, comprising: an elongated splint; one side of said splint forming a rest to accommodate an injured finger and one end of said splint having a crutch end curving towards the opposite side from said rest and disposed to bear on the fleshy portion of the palm immediately adjacent to the knuckle joint of such injured finger; the other end of said splint having a large boss on one side positioned to lie at the end of such injured finger; said boss having an opening therethrough and a rod shaped traveler positioned in said opening to move longitudinally of said splint, said traveler having means abutting the adjacent portion of said splint and preventing rotation of said traveler; said traveler having a threaded bore and a screw eye positioned in said bore to which tension means can be fastened for traction of such injured finger; and the outer end of said traveler being threaded and a nut positioned on the same and abutting said boss for moving said traveler longitudinally of said splint.

4. An adjustable finger splint, comprising: an elongated splint; one side of said splint forming a rest to accommodate an injured finger and one end of said splint having a crutch end curving towards the opposite side from said rest and disposed to bear on the fleshy portion of the palm immediately adjacent to the knuckle joint of such injured finger; a pair of wings positioned on said splint adjacent said curved end and extending from the edges of said rest to lie on either side of such injured finger, each wing being in position to bear on the crotch between

5

such injured finger and an adjacent finger; the other end of said splint having a boss on one side positioned to lie at the end of such injured finger; said boss having an opening therethrough and a traveler positioned in said opening to move longitudinally of said splint; manually operable mechanical means for moving said traveler in said opening longitudinally of said splint; and means on said traveler for securing tension means to said traveler for traction of such injured finger.

5. An adjustable finger splint, comprising: first and second elongated splint members, said splint members having their inner end portions juxtaposed and being slidable longitudinally of each other whereby they form an extensible unit; adjustable means securing said splint members together; one side of said first splint member forming a rest to accommodate an injured finger; the outer end of said first splint member having a crutch end curving toward the opposite side from said rest and disposed to bear on the fleshy portion of the palm immediately adjacent to the knuckle joint of such injured finger; a pair of wings positioned on said first splint member adjacent said curved end and extending from

6

the edge of said rest to lie on either side of such injured finger, each wing being in position to bear on the crotch between such injured finger and an adjacent finger; the outer end of said second splint member having a boss on one side positioned to lie at the end of such injured finger; said boss having an opening therethrough and a traveler positioned in said opening to move longitudinally of said splint members, said traveler being secured against rotation in relation to said boss; manually operable mechanical means for moving said traveler in said opening longitudinally of said splint members; and means on said traveler for securing tension means to said traveler for traction of such injured finger.

ADRIAN D. BAER.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,237,251	Longfellow	Apr. 1, 1941

FOREIGN PATENTS

Number	Country	Date
605,706	France	Feb. 22, 1926