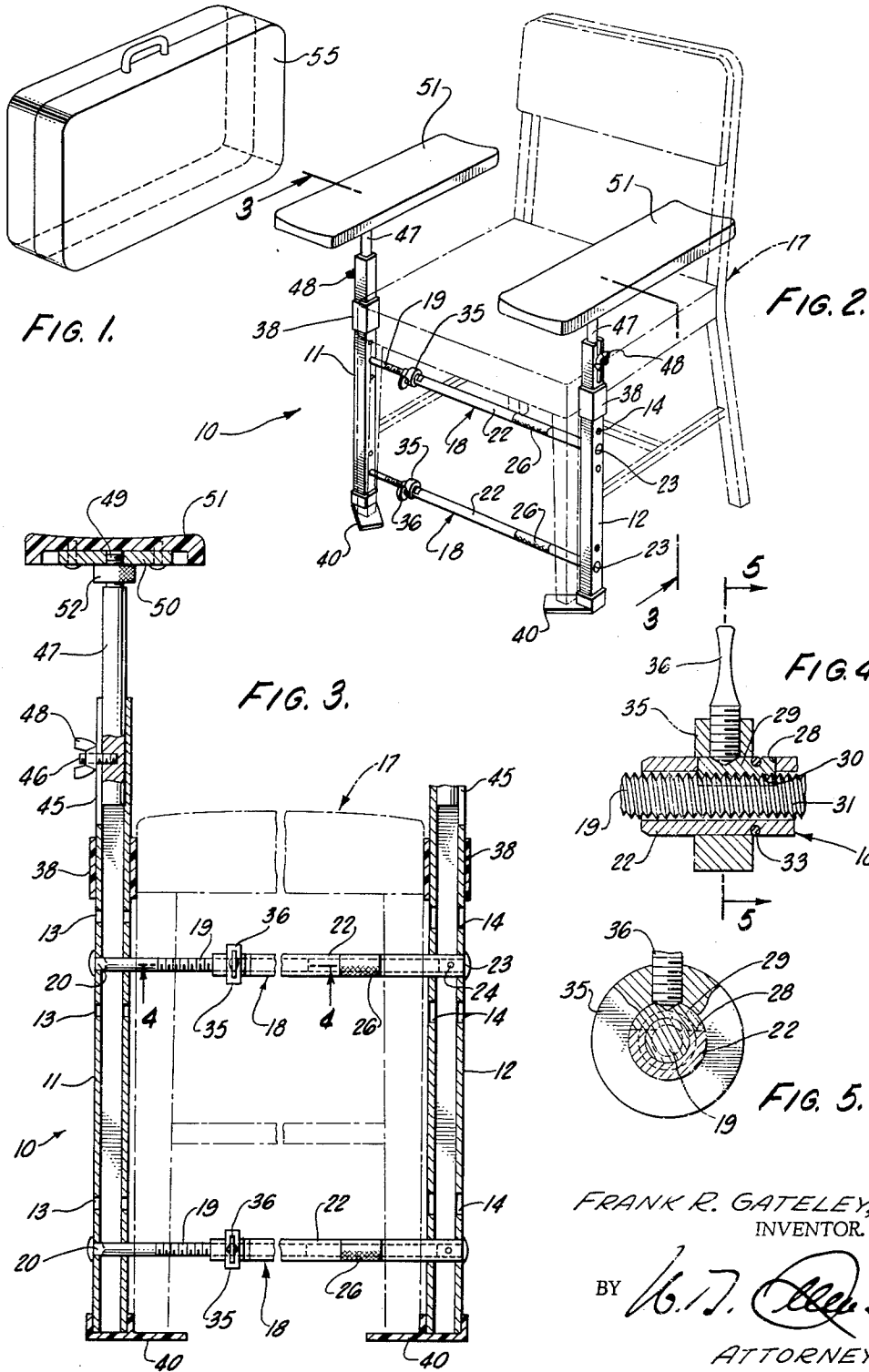


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F. R. GATELEY
SET OF ARM ACCESSORIES FOR CHAIRS

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SET OF ARM ACCESSORIES FOR CHAIRS
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This invention relates to an accessory suitable for use as an adjunct to polygraph equipment and more particularly to a set of fittings attachable to a wide variety of conventional chairs to provide a pair of armrests specially designed for use while examining a subject with a polygraph.

Police officials, detectives and other investigators having need for examining persons with a polygraph are often called upon to conduct such examinations in the field utilizing whatever equipment may be available. It is desirable for a person undergoing examination for telling the truth to be seated in a position of relaxation in a chair with his forearms extending horizontally in a comfortable position at his sides with the hands and fingers outstretched in a normal relaxed condition. Not infrequently it is not easily arranged to seat a subject in this manner utilizing available chairs.

By this invention there is provided a lightweight, simple, rugged, easily portable set of accessories readily attachable to a wide variety of conventional chairs. Generally speaking the accessories comprise a set of long, wide armrests together with means for supporting the same at a desired height along either side of a wide range of commonly available chair constructions. The demountable accessories are normally carried compactly packaged in a nonconspicuous carrying case such as an ordinary suitcase and include means for clamping the arm supports rigidly to the sides of the chair as well as for supporting the armrest proper at a desired height comfortable to the particular subject. As herein disclosed by way of example, the accessories also include a pair of leg supports clampable against the sides of a chair using fast-action clamping tie rods. The armrests are then inserted into the open top of the legs and clamped at a desired height.

Featured by the invention is one or more simply-designed fast-action tie rods having threaded components which are quickly and easily assembled to relieve looseness between the parts and thereafter tightly clamped to the chair by a few turns of one of the threaded components. To release the accessories for removal from the chair, the operator need but shift a locking collar thereby permitting immediate separation of the tie rod components for packing, it being unnecessary to rotate the threaded components proper of the tie rods.

Accordingly, it is a primary object of the present invention to provide a lightweight, portable set of armrest accessories easily and quickly attachable to a conventional chair while examining a subject with a polygraph.

Another object of the invention is the provision of supporting legs together with an adjustable armrest for each and means for clamping these subassemblies to the sides of a chair.

Another object of the invention is the provision of a fast-action tensioning and clamping device utilizing a pair of cooperating threaded members quickly assembled to the point of tensioning and thereafter tightly tensioned by comparatively slight rotation relative to one another.

Another object of the invention is the provision of a fast-action tie rod assembly instantly releasable from a tensioned condition by axial displacement of a retainer collar and without need for relative rotation of the tie rod members.

These and other more specific objects will appear upon reading the following specification and claims and upon considering in connection therewith the attached drawing to which they relate.

Referring now to the drawing in which a preferred embodiment of the invention is illustrated:

FIGURE 1 is a perspective view of a compact carrying case enclosing the disassembled components of the present invention;

FIGURE 2 is a perspective view of a typical chair showing the accessories of this invention in assembled position with respect thereto;

FIGURE 3 is a sectional view on an enlarged scale taken along line 3-3 on FIGURE 2 showing details of the structure;

FIGURE 4 is a fragmentary sectional view on an enlarged scale taken along line 4-4 on FIGURE 3; and

FIGURE 5 is a fragmentary cross-sectional view taken along line 5-5 on FIGURE 4.

Referring to FIGURES 1 to 5, there is shown an illustrative embodiment of the invention accessories designated generally 10. These include a pair of hollow legs 11, 12 preferably of square cross-section and differing from one another only in that leg 11 is provided with a plurality of noncircular openings 13 whereas leg 12 is provided with a corresponding number of circular openings 14.

Legs 11, 12 are adapted to be held clamped against the forward opposite sides of an ordinary chair 17 by at least one and preferably by a pair of identical tie rod assemblies 18, 18. Since these tie rods are similar in construction, the detailed description of one will suffice for both. The tie rod assemblies comprise an elongated threaded rod 19 having a noncircular shank portion 20 adjacent its head and sized to seat in one of the noncircular openings 13 of leg 11. Cooperating with rod 19 is a nonthreaded tube 22 having a headed member 23 held assembled within one end by a pin 24. This tube fits freely through a selected pair of aligned openings 14 in leg member 12. Desirably an intermediate portion of tube 22 is knurled as indicated at 26 to facilitate gripping of the tube while rotating it to tighten the tie rod assembly and clamp legs 11 and 12 against the sides of the chair.

Referring more particularly to FIGURES 4 and 5, it is pointed out that tube 22 is provided with a rectangular opening or cutout 28 adjacent the end remote from head 23. Loosely seated in cutout 28 is a semicircular insert 29 corresponding generally in size and shape with the portion removed in making cutout 28 and formed on its interior surface with threads 30 mating with threads 31 on rod 19. It will be understood that the threads on the rod slide smoothly and freely along the interior of tube 22 but are engaged by the threads 30 of insert 29. Both the insert and the adjacent portion of tube 22 are provided with an annular groove normally seating resilient retainer, such as a garter spring or an O-ring 33, normally effective to hold the insert firmly but resiliently seated and centered in cutout 28. This spring is of light strength and permits insert 29 to move outwardly readily and as necessary for the threads of rod 19 to override threads 30 as an attempt is made to move rod 19 axially in either direction along tube 22. Immediately that pressure is released from the rod the spring causes threads 30 of the insert to mate with the threads of the rod. However, the application of load forces to tension assembly 18 is immediately effective to cam the insert outwardly permitting telescopic movement of the tie rods and components 19, 22.

When it is desired to use the tie rod assembly to support an applied load, a locking collar 35 having a loose

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sliding fit along the exterior of tube 22 is shifted to embrace insert 29 whereupon thumb screw 36 provided therein may be tightened to clamp the collar firmly in locking position. When so adjusted the hand grip knurling 26 of tube 22 may be grasped and the tube rotated to either loosen or tighten the tie assembly. Normally the hand grid is employed only to apply tensioning to this assembly. This is for the reason that loosening of the tensioned tie rod may be accomplished substantially instantly by merely loosening thumb screw 36 and shifting collar 35 axially of the tube and out of contact with insert 29. Instantly this occurs, the load force acting on the tie assembly cams insert 29 outwardly allowing rod 19 to move axially of tube 22.

Desirably legs 11 and 12 are fitted with friction gripping resilient sleeves 38 near their upper ends to engage the sides of the chair to safeguard against damaging the finish upon tightening of the tie rod assemblies. Likewise the lower ends of the legs may be and desirably are provided with wide-based elastomeric members 40 having sockets seating the lower ends of the legs. The bases of these members are designed to underlie the front legs of the chair so that the weight of the subject will be effective to anchor legs 11 and 12 even more firmly against the chair legs.

The upper end of each of the legs is preferably provided with a vertically extending slot 45 permitting the passage therealong of a threaded stud 46 projecting laterally from the side of bracket tube 47 employed to support the armrest. A wing nut threaded over stud 46 is operable when tightened to anchor brackets 47 in any desired adjusted position lengthwise of the upper ends of legs 11 and 12.

The upper ends of brackets 47 have a threaded end 49 matable with one or more threaded openings distributed lengthwise along an insert 50 bonded, riveted or otherwise secured to the underside of armrest 51. A large diameter jam nut 52 is adjustable against the bottom of reinforcing member 50 to clamp arm 51 firmly to bracket 47. As here shown, armrests 51 are formed of a suitable molded plastic and are sufficiently long and broad to provide a comfortable support for the entire forearm and outstretched fingers of the subject.

When the described armrest accessories are assembled as shown they are in readiness for use by a subject to be examined with a polygraph. The subject is seated in chair 17 with his outstretched arms resting on the upper sides of armrests 51. Thumb nuts 48 and brackets 47 are then adjusted as necessary to support his arms in a natural fully relaxed condition and with the forearms in a level position, the subject being seated with his body upright and resting comfortably against the backrest of the chair. Various connections normally used with a conventional polygraph (not shown) are then attached to the subject including his hands, arms and other parts of his body and the test is conducted in the usual manner.

After the test has been completed, the desired components are dismantled merely by loosening thumb screws 48 and lifting the armrests from the upper ends of legs 11 and 12. Jam nuts 52 are then loosened and bracket tubes 47 are unscrewed from the arms. To remove legs 11 and 12 the operator merely loosens thumb nut 36 and shifts collar 35 along tube 22 whereupon the freed insert 29 moves outwardly allowing the threaded rods 19, 19 to be withdrawn from tubes 22. The tie rods are then detached from the legs and all the components are packed in suitable receiving compartments of a tray provided in carrying case 55. It is pointed out that one-half of this case suffices to house the described armrest accessories, the other half being available to store polygraph instrument supplies or personal items. Accordingly, this single case provides a companion case to the one conventionally employed for portable polygraph equipment.

It remains to be pointed out that all components are desirably formed from lightweight plastics and metals.

While the particular set of arm accessories for chairs

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herein shown and disclosed in detail is fully capable of attaining the objects and providing the advantages hereinbefore stated, it is to be understood that it is merely illustrative of the presently preferred embodiments of the invention and that no limitations are intended to the details of construction or design herein shown other than as defined in the appended claims.

I claim:

1. A set of accessories attachable to a conventional chair for the convenience of a subject undergoing questioning while connected to polygraph equipment, said accessories comprising, a pair of long wide generally-flat rigid arms for supporting a subject's forearms and his outstretched fingers, rigid support means attached to said arms and extendable along the opposite lateral edges of a chair, adjustable means extending beneath a chair seat interconnecting said support means and adjustable to clamp said support means firmly against the chair sides, and said accessories being easily and readily demountable for compact storage when not in use.

2. A lightweight readily demountable portable set of accessories adapted to be attached to any of a wide variety of chairs to convert the chair to more effective and efficient use to support a subject while undergoing examination with polygraph equipment, said accessories including a pair of similar long broad armrest members, supporting leg means for each arm member, cross tie means having the opposite ends thereof attachable to said leg means beneath a chair seat and including adjustable tensioning means operable as it is tightened to clamp said leg means against the opposite lateral sides of a chair to anchor said legs and said armrest members rigidly and immovably to the chair, and said accessories being securable to and releasable from a chair simply by operation of said adjustable tensioning means.

3. A set of accessories as defined in claim 2 characterized in the provision of means for adjusting the spacing of said armrest members above the floor to accommodate the particular subject and support his forearms horizontally in a comfortable relaxed condition.

4. A set of accessories as defined in claim 3 characterized in the provision of thin web-like extensions on the lower ends of said leg means adapted to rest against the floor beneath the ends of an adjacent chair leg and cooperable therewith to stabilize said leg means and to assist in supporting the armrest means firmly and immovably.

5. A set of accessories as defined in claim 2 characterized in that said adjustable tensioning means includes fast-action threaded fastener means including a pair of threaded component means effective to permit telescopic relative movement of the threaded components in either axial direction to the point of load application and including means to hold said pair of threaded components engaged to carry load forces as they are rotated relative to one another.

6. That improvement in portable polygraph equipment adapted to be set up speedily in the field making use of any of a wide variety of conventional chairs to seat a subject suitably and comfortably while undergoing a lie detector test, said equipment being of the type having conventional recording equipment activated by a plurality of sensor means attachable to the person undergoing questioning, said improvement comprising a pair of long wide armrest members, leg means attachable to each armrest member and extending vertically downwardly therefrom, adjustable tie rod means having its opposite ends connectable to said leg means beneath the seat of a chair and operable when tightened to clamp said leg means immovably to the opposite sides of the chair, and a protective carrying case adapted to receive and compactly store the polygraph recording equipment, said arm members, said leg means, and said tie rod means.

7. A set of accessories attachable temporarily to a

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conventional chair to provide a subject undergoing examination by polygraph equipment, a comfortable horizontal support for each of his forearms and hands, said accessories comprising a pair of legs, a pair of armrests, means for detachably anchoring said armrests to a respective one of said legs with the arms extending horizontally along the opposite sides and above the seat of a chair, adjustable tie rod means extending between said legs and effective as the same are tightened to clamp said legs against the opposite sides of a chair, said tie rod means including a nonthreaded tubular member and a threaded rod member slidable lengthwise of said tubular member, said tubular member having an opening provided with a movable insert, said insert having threads provided on its interior side matable with the threads on said rod member, the threads of said rod member being movable past said insert normally, and means on said tie rod means for holding the threads on said insert positively engaged with the threads of said rod member whereby said tie rod means may be tightened and released as desired by relative rotation of said threaded rod and tubular members.

8. A set of accessories as defined in claim 7 characterized in that the same include a plurality of said tie rod means having their opposite ends supported by said pair of legs at spaced-apart positions therealong.

9. A set of accessories as defined in claim 7 characterized in that said threaded rod has a noncircular portion seating nonrotatably in a complementally shaped opening in one of said legs, said tubular member being readily rotatable relative to the other of said legs, whereby said tie rod means may be tightened and loosened by grasping said tubular member and rotating the same in the appropriate direction about the axis thereof.

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10. The invention defined in claim 2 characterized in that said cross-tie means and the adjustable tensioning means therefor comprises a one-piece non-threaded tubular member having an opening in the side wall thereof, an elongated rod slidable freely within and lengthwise of said tubular member and having a V-shaped thread therealong, an insert having a loose fit against the edges of the opening in said tubular member and formed on its interior with V-shaped threads mating with the V-shaped threads of said rod, means resiliently holding said insert in assembled position in said opening with its thread in position to mate with said rod and permitting said rod to override said insert threads readily in either axial direction, and means slidable along the interior of said tubular member into and out of engagement with said insert and operable when engaged therewith to hold said insert threads positively engaged with the rod threads.

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