No. 892,686. PATENTED JULY 7, 1908.

C. P. E. SCHNEIDER & E. RIMAILHO.

FOLDING OBSERVATORY APPLICABLE FOR USE IN CONNECTION WITH MILITARY AND OTHER OPERATIONS.

APPLICATION FILED AUG. 23, 1906.

3 SHEETS—SHEET 1.

Fig. 1.

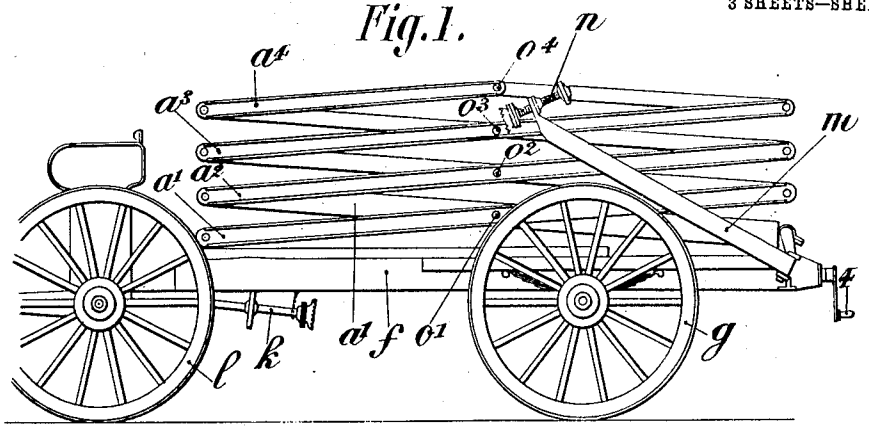
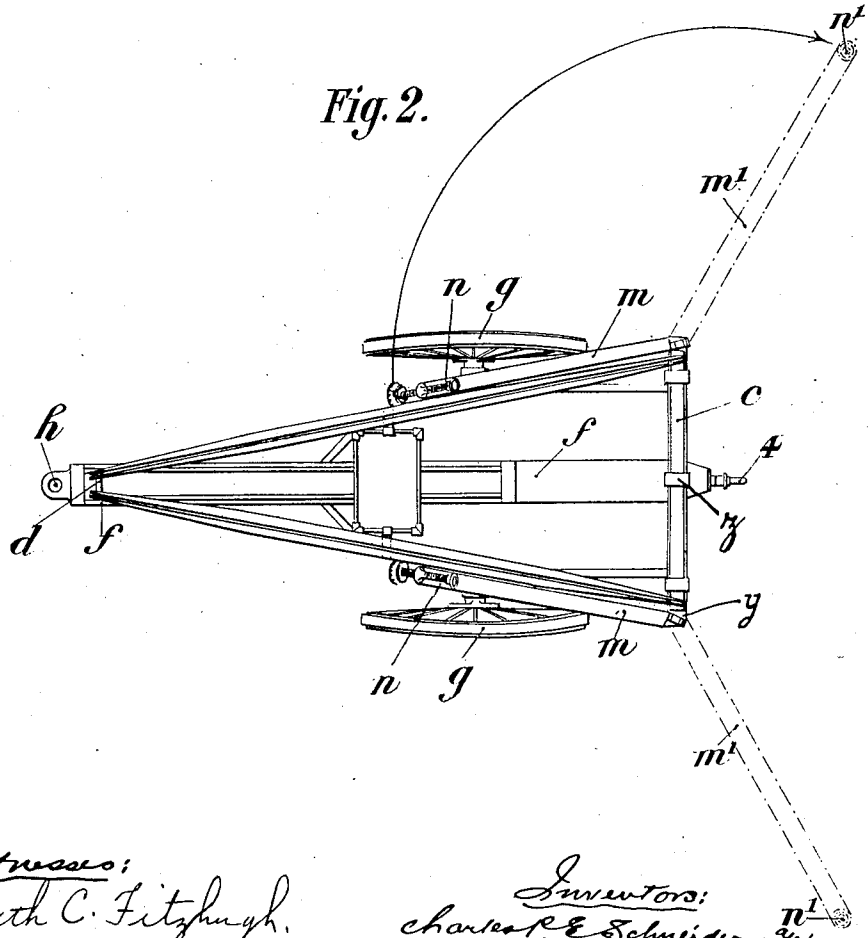


Fig. 2.



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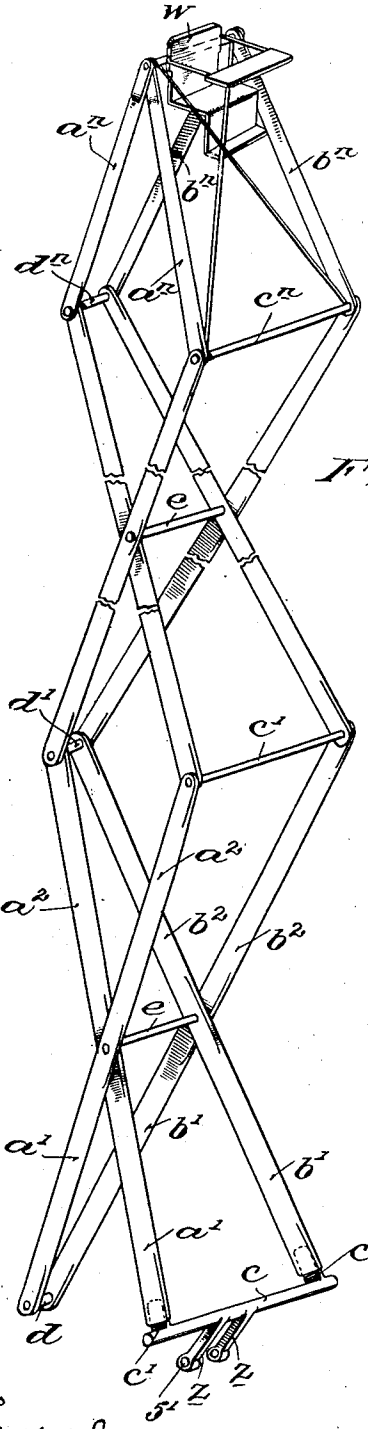
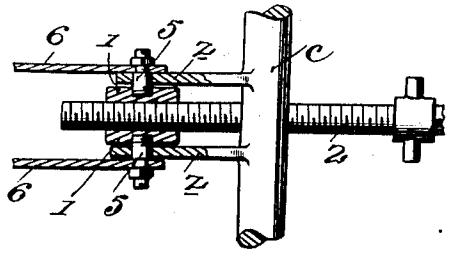


Fig. 3.

Fig. 8.



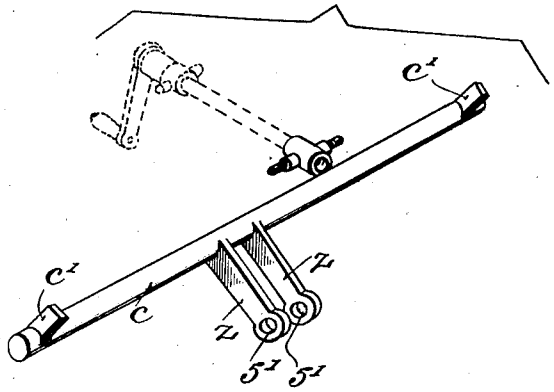


Fig. 7.

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3 SHEETS--SHEET 3.

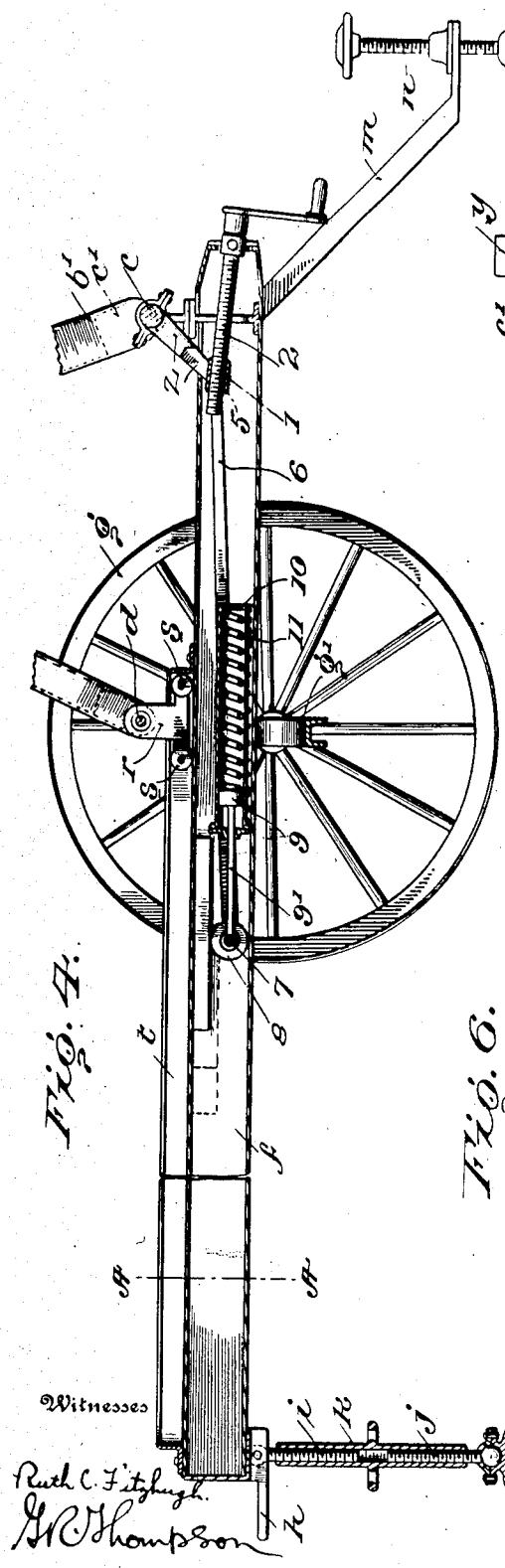


Fig. 4.

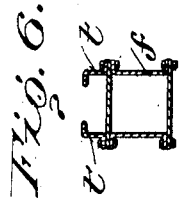


Fig. 6.

Fig. 5.

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UNITED STATES PATENT OFFICE.

CHARLES PROSPER EUGÈNE SCHNEIDER, OF LE CREUSOT, AND EMILE RIMAILHO, OF NEUILLY-SUR-SEINE, FRANCE.

FOLDING OBSERVATORY APPLICABLE FOR USE IN CONNECTION WITH MILITARY AND OTHER OPERATIONS.

No. 892,686. Specification of Letters Patent. Patented July 7, 1908.

Application filed August 23, 1906. Serial No. 331,751.

To all whom it may concern:

Be it known that we, CHARLES PROSPER EUGÈNE SCHNEIDER and EMILE RIMAILHO, residing, respectively, at Le Creusot, (Saône-et-Loire,) France, and at 54 Boulevard Maillot, Neuilly-sur-Seine, (Seine,) France, have invented a new and useful Improved Folding Observatory Applicable for Use in Connection With Military and other Operations, which is fully set forth in the following specification.

This invention relates to an improved observatory applicable for employment in connection with military and other operations, the object being to provide a folding support adapted to be placed upon a vehicle and capable of speedy erection for the purpose of constituting an observatory of considerable altitudinal proportions for use in carrying out artillery maneuvers, for example.

Broadly speaking, the support is composed of a series of "lazy tongs" or extensible levers connected one to the other at their extremities in such manner that said support is erected when the lower arms are caused to approach each other, and is folded up or collapsed when said arms are separated, the object of the invention being to provide a device of this character which is simple in construction and the operative parts of which are few and fully protected—to the end that the device may be efficient, durable, and capable of resisting the rough usage to which it is subjected in operation.

The invention will be better understood by reference to the accompanying drawings, wherein—

Figure 1 is an elevation illustrating several sets of lazy-tongs constituting the extensible structure folded and arranged upon a carriage or vehicle; Fig. 2 is a plan view of the carriage or vehicle with an extensible structure mounted thereon, composed of two pairs of lazy-tongs one pair being arranged at each side of the carriage; Fig. 3 is a perspective view of an extensible structure composed of a plurality of pairs of lazy-tongs, in its extended or elevated position; Fig. 4 is a view, partly in longitudinal section and partly in elevation of the carriage and the lower part of the extensible structure; Fig. 5 is a plan view of the carriage, the extensible structure, the wheels, and the supports for vertically adjusting said carriage being removed; Fig. 6 is a transverse section of the carriage taken on the line A—A, Fig. 4; Fig. 7 is a perspective view showing disassembled the parts of the mechanism for manually elevating and folding the extensible support; and Fig. 8 is a horizontal section through said parts in their assembled position.

Referring to the drawings, the base upon which the extensible structure is mounted is composed of two parallel side bars v, a cross bar y, here shown as a T-girder, connecting said side bars, and a beam f to which latter the forward converging ends of side bars v are connected, and which is secured in any suitable manner to cross bar y. Said bar is shown in Fig. 4 as passing through said beam. This base is mounted in any suitable manner upon axle g' on either end of which is mounted wheels g. The forward end of beam f is provided with means, here shown as an eyelet h, for connecting the base to any suitable fore-carriage l.

An extensible support is constituted for a seat w (Figs. 2 and 3) by two identical series of lazy-tongs or extensible levers united at the extremities of the arms of said lazy-tongs and at the points where said arms cross. One series of extensible levers are designated by a'—a', a^2—a^2 . . . a^n—a^n (Fig. 3), and b'—b', b^2—b^2 . . . b^n—b^n indicate the other series. The lower extremities of the arms a' are suitably united to the lower extremities of the arms b' by transverse rods d and c, the latter being mounted in bearings u arranged on girder y and, preferably, provided with integral stubs c' which extend into and are secured to the ends of said arms a' and b' which it connects. The two series of levers or lazy-tongs are further connected by transverse pieces e at the points where the several arms of each series cross each other and at the ends of said arms by transverse pieces c' . . . c^n and d' . . . d^n.

In practice it is more convenient to make the transverse bars d, d' . . . d^n shorter than the transverse bars c, c' . . . c^n.

It will be understood that if the transverse pieces c and d are separated in a horizontal plane, the arms of each of the superposed lazy-tongs will separate one from the other, the height of the lazy-tongs will diminish and the transverse pieces will descend in a vertical plane; in this manner the height of

the extensible support may be reduced at will; also the nearer the transverse pieces *c* and *d* are moved in a horizontal plane toward each other, the greater the extensible structure will be projected vertically. In order that this relative movement of the transverse pieces *c* and *d* may be readily effected, the rod *c* has secured thereto in any suitable manner lever arms *z* which project through a slot 6′ in beam *f* and are held in their proper position relatively to nut 1 by means of trunnions 5 which are screwed in or otherwise secured to said nut 1 and are connected to said lever arms in any usual manner, as by passing loosely through eyelets 5′ in said lever arms. Through said nut 1 passes a screw 2 which is pivoted at 3 to the beam *f*, and provided at the end which projects from said beam with a crank or handle 4. The manipulation of this handle accordingly results in the rotation of shaft *c* and the consequent extension or folding of the extensible support.

To reduce the energy necessary to be exerted at the handle 4 to elevate the extensible structure, there is provided a suitable motor mechanism, such as a spring, a pneumatic or hydro-pneumatic device, etc., suitably connected to and having a constant tendency to unfold or erect the support. As herein shown, this mechanism consists of a spring 11 confined in a suitable cylinder 10 carried in the hollow cylinder *f*, and acting on a piston 9 movable in said cylinder. A piston rod 9′ connects said piston to a cross-piece 7 on either end of which are mounted rollers 8 which move and are guided in beam *f*. Said cross-piece 7 has also connected thereto one extremity of each of two rods 6 the other ends of which rods loosely engage trunnions 5. It will therefore be seen that the tendency of the spring is to extend or unfold the extensible support, and that said support is lowered against the tension of said spring which insures that the folding of the device shall be easy and deliberate, and obviates the possibility of a sudden collapse of the structure and consequent damage to the parts.

The operation of the device is further facilitated and rendered easier by pivoting the transverse rod *d* to a carriage *r* provided with rollers *s* which travel in guides *t* arranged on beam *f*.

To insure that the base on which the extensible support is mounted shall be horizontal and quite stable when it is desired to elevate the extensible support, there are secured to the two ends of the structure suitable screw-jacks, adjustable in the usual manner. As herein shown, two arms *m* are pivoted, one to each end of cross-bar *y*, said arms being provided with jacks *n*. The jack secured at the forward end of the base is herein shown as pivoted to beam *f* and as being constituted by two screws *i* and *j* engaging in a sleeve or nut *k*. When the device is being moved from place to place said jacks may be swung off the ground and suitably secured in their elevated position.

It will be appreciated that the device herein described is very simple and strong, the operative parts being contained in and fully protected by the beam *f*—thus rendering the device compact, durable and capable of resisting the rough usage to which it is subjected in field or other service.

What we claim and desire to secure by Letters Patent of the United States is:—

1. In a portable observatory tower, the combination of a vehicle provided with a base having a pair of parallel ways and a pair of bearings arranged in a line at right angles thereto, a plurality of pivotally connected folding frames constituting an observation tower, a rock shaft engaging said bearings and fast to the end of one of said frames, the free end of the companion frame slidably engaging said ways, hand-operated means engaging said shaft for rocking the same and spring-pressed means tending to act through said shaft to raise said tower.

2. In a portable observation tower, the combination of a vehicle provided with a base having a pair of parallel ways and a pair of bearings arranged in a line at right angles thereto, a plurality of pivotally connected folding frames constituting an observation tower, a rock shaft engaging said bearings and fast to the end of one of said frames the free end of the companion frame slidably engaging said ways, said rock shaft provided with a crank arm having a pivotally supported nut, an operating rocking screw engaging said nut and spring-pressed means tending to act through said shaft to raise said tower.

3. In a portable observation tower, the combination of a vehicle provided with a base having a pair of parallel ways and a pair of bearings arranged in a line at right angles thereto, a plurality of pivotally connected folding frames constituting an observation tower, a rock shaft engaging said bearings and fast to the end of one of said frames the free end of the companion frame slidably engaging said ways, said rock shaft provided with a crank arm having a pivotally supported nut, an operating rocking screw engaging said nut to raise and lower said tower, and spring-pressed means tending to act through said shaft to raise said tower.

4. In an aerial apparatus, the combination of a base comprising in part a hollow beam, a plurality of pairs of extensible levers or lazy-tongs mounted thereon, transverse rods connecting said levers at their extremities, fixed bearings for one of said rods, a lever secured to said rod and projecting into said hollow beam, a nut connected to said

lever at its lower end, a pivoted screw engaging said nut to effect the extension or collapse of said extensible levers, a piston connected to said lever and mounted in said hollow beam, means engaging said piston to assist in the extension of said levers, and a carriage secured to the other extremity rod and movable on said hollow beam.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

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EMILE RIMAILHO.

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PIERRE GODEN.