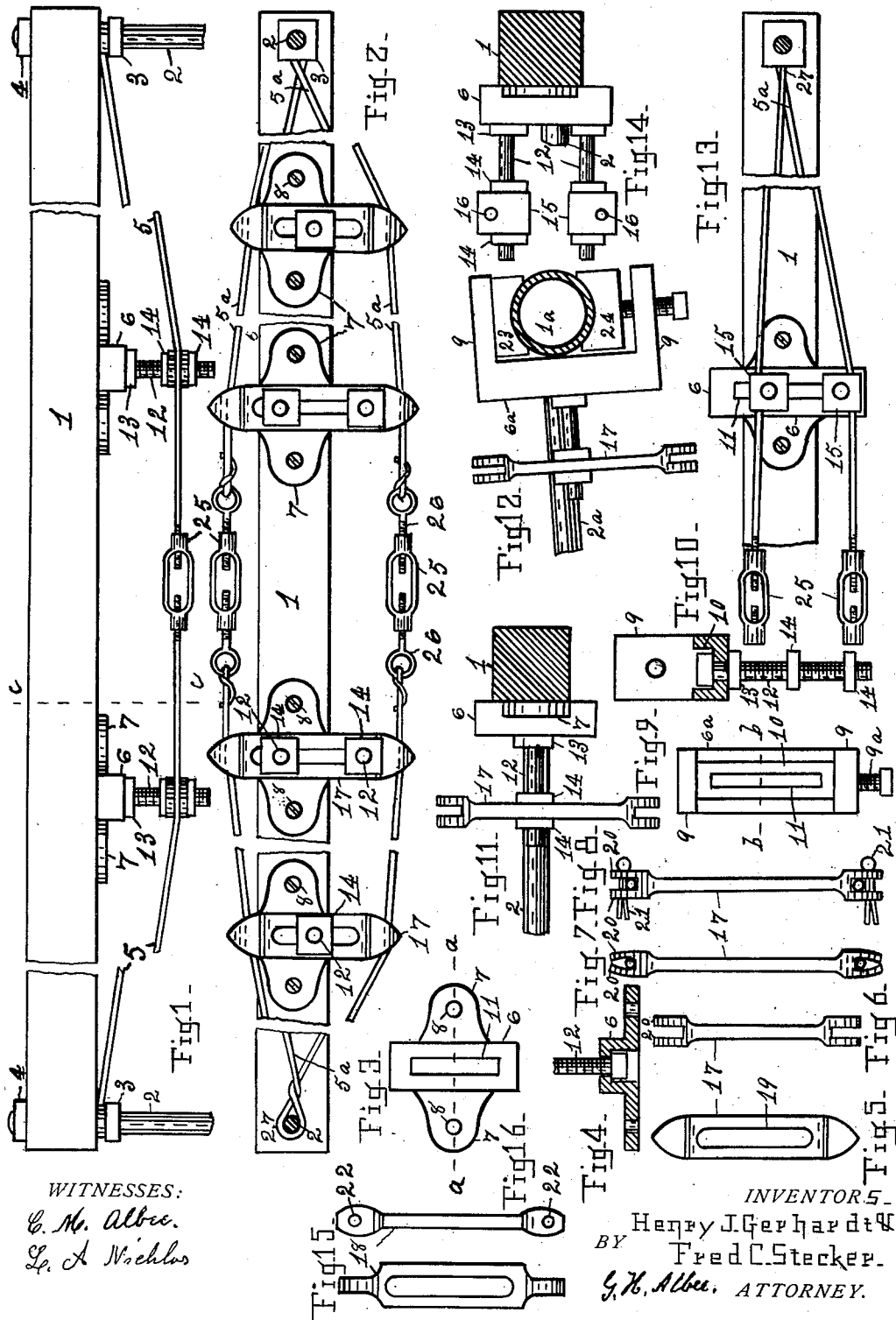


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 TRUSS ROD CONSTRUCTION AND ADJUSTING DEVICE.
 APPLICATION FILED NOV. 30, 1908.

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TRUSS-ROD CONSTRUCTION AND ADJUSTING DEVICE.

932,118.

Specification of Letters Patent. Patented Aug. 24, 1909.

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To all whom it may concern:

Be it known that we, HENRY J. GERHARDT and FRED C. STECKER, citizens of the United States, residing at Neenah, in the county of Winnebago and State of Wisconsin, have invented a new and useful Truss-Rod Construction and Adjusting Device, of which the following is a specification.

Our invention relates to an adjustable strut, and to the formation of a truss rod, and is particularly applicable to the front rail of awnings for the fronts of stores and other buildings, but may be applied for straightening or strengthening rails or beams for other purposes. These awnings are often supported by only two arms which are hinged to the fronts of buildings and are often from 25 to 30 ft. apart, and requiring said front rail to extend the full distance between the arms without an intermediate support, the result of which is, that said front rail is sure to sag downward, and inward toward the building, along the middle of its length, and causing the awning, both when swung down for use and up against the building, to present an unsightly appearance and detracting from the strength of the rail and usefulness of the awning. For avoiding these difficulties and straightening and strengthening said front rail, we apply a truss rod, one or more, as the case requires, which extends from end to end of the rail, each truss rod being provided with two or more struts intermediate its ends, which space the truss rods from the rail, and with a turnbuckle for each rod by which it may be tightened, our invention being confined principally to making the struts adjustable in their length, in the position of the strut transversely of the rail to be trussed, and also, in the manner of forming and applying the truss rods, whereby, any sag which may exist in the rail, whether it be downward, inward toward the building, or a combination of said directions, may be entirely taken out and the rail made straight, the truss rods for accomplishing this result being so made that the material for any length of awning rail, can be easily kept in stock by the person engaged in the awning business.

The accompanying drawing illustrates in its several figures, our improvements.

Figure 1 is a plan showing a wood front rail for an awning, broken in its length, a part of its two end supporting arms, two struts of our invention spaced apart and secured to

the rail, and a truss rod extending substantially from end to end of the rail, and a turnbuckle for tightening the rod. Fig. 2 is an elevation of the inside of an awning rail or the side that is toward the building when the awning is down, broken in its length, its supporting arms being in section, the rail having two truss rods with a turnbuckle for each rod, and four of our improved struts for spacing the rods apart and from the awning rail. Fig. 3 is a plan of a bracket for holding one or two strut bolts. Fig. 4 is a transverse section of the bracket on the line *a, a*, of Fig. 3. Fig. 5 is a plan of a truss rod holder and spreader, showing its widest transverse dimension. Fig. 6 is a plan of Fig. 5 showing its edge or narrowest dimension, transversely of it. Figs. 7 and 8 are plans upon a larger scale than the others, of a truss rod holder and spreader, showing their edges and the manner in which the truss rods may be retained by them, Fig. 7 being formed of malleable iron and its ends bent toward each other, and Fig. 8 being provided with cotter pins. Fig. 9 is an elevation of the inside of another form of bracket from Fig. 3, which is adapted for use upon rails formed of iron pipe. Fig. 10 is a transverse section of said bracket on the line *b, b*, of Fig. 9. Fig. 11 is a vertical section upon the line *c, c*, of Fig. 1, as it appears in looking toward the left. Fig. 12 is a transverse section, similar to Fig. 11, but having the bracket as shown in Figs. 9 and 10 applied to an iron pipe. Fig. 13 is an elevation, similar to the right hand end of Fig. 2, but having individual truss rod spreaders instead of the one shown in Figs. 5 and 6. Fig. 14 is a transverse section, similar to Fig. 11, but having the individual truss rod holders and spreaders, as in Fig. 13. Fig. 15 is a plan of a modified form of truss rod holder and spreader. Fig. 16 is an edge view of the same.

Similar numerals and letters indicate like parts in the several views.

1, 1^a, indicate wood and iron pipe awning rails respectively; 2, 2^a, their end supporting arms by which the rails are hinged to a building; 3, a nut collar upon the arms; 4, nuts upon the ends of the arms for retaining the rail thereon. The truss rod pieces 5, when there is but one rod used, may be connected with the rail by forming an eye in one end and slipping it upon the arm between the rail and collar 3, or if there are two truss rods for the rail, by doubling the wire of which the

rod is formed and twisting it near said doubled part, as is shown in Fig. 2, the collar 3 being omitted at the left hand end of the rail in Fig. 2 for showing said twist. The strut 5 for spreading the truss rod from the rail consists of a truss rod strut holder or bracket, 6, or 6*, the former being provided with wings 7 having holes for receiving wood screws 8 by which to secure the bracket to a rail formed of wood, and the latter having two arms 9 which extend parallel with each other, through one of which a set screw 9*, is inserted, and by means of which the bracket may be attached to a rail formed of piping. 15 Each style of bracket is formed with a bolt head seat 10, having side walls for preventing the bolt head from turning around therein, and a slot 11, arranged longitudinally of the bracket, for the passage through it of a strut 20 bolt.

The threaded strut bolt 12, which may be of any desired length, can be secured to the bracket in any desired position within the length of the slot 11, by means of the nut 13. 25 Spaced from the nut 13, a suitable distance, are two nuts 14, between which two nuts a truss rod holder and spreader is clamped. This may be individual blocks 15, mounted upon the bolt 12 and having a perforation 16, 30 for receiving a truss rod, as in Figs. 13 and 14, or be the spreader 17 or 18, as shown in Figs. 5, 6, 7, 8, 15 and 16. In the former case the block is carried upon a single bolt, but in the latter case the spreaders 17 or 18, 35 may be carried upon one bolt as in the outer brackets in Fig. 2, or upon two bolts, as in its inner pair of brackets in said figure. These holders and spreaders 17 or 18, which will usually be preferable to the single blocks, 40 consist of a thin bar having a slot longitudinally of it, each end of Fig. 8 being provided with two arms 20, spaced apart, and a cotter pin 21, inserted through them for retaining the rod 5 therein. The piece 17 in Fig. 7, is 45 formed of malleable iron and the ends of the arms 20, are bent toward each other, and Fig. 16 shows the piece 18, with its ends provided with perforations 22, for the passage through them of the truss rod.

50 For attaching the bracket 6*, to an awning rail formed of a pipe as in Fig. 12, two blocks 23 and 24 are inserted between the bracket arms and the pipe 1*, the latter block being thicker than the former, so that by changing 55 their positions one for the other, the bracket can be raised or lowered relative to the rail. It will be observed that the bracket in this case is not attached to the pipe in a vertical position, but is inclined toward the building 60 from which the awning is supported, whereby, the application of a single truss rod, when properly tightened up, will not only exert its force to straighten any sag inward, but one downward also. In some cases it may 65 be necessary to apply two truss rods, as is

shown in Fig. 2, and the number of brackets may be two or more, and the number of strut bolts to each bracket may be one or two, as the number of crooks and their direction seem to require.

In Fig. 2 is shown our improvement in the 70 formation of truss rods. The turnbuckles 25 and screw eyes 26 may be made in quantities to a standard gage, all properly threaded, one of the screw eyes and one end of the 75 turnbuckle having a right hand thread and the other screw eye and the other end of the turnbuckle having a left hand thread. Where two truss rods are to be applied to an awning for removing any sagging in its rail, a single 80 piece of wire of a suitable gage and length, is all that is required. A person starting out to straighten up a number of awning rails, all varying in length, has but to provide himself with a number of brackets with their thread- 85 ed strut bolts and truss rod holders and spreaders, turnbuckles and screw eyes, in proportion to the number of rails to be straightened, a coil of wire, cutting and twisting nippers and a wrench, and he is fully 90 prepared with the supplies and tools for many separate jobs, all differing in the length of their rails and the amount of deflection in the rails from a straight line.

In applying the truss rods, the brackets 95 with their strut bolts and truss rod holders and spreaders are to be first secured in position at the distance apart suited to the particular case. A piece of wire is then to be cut from the coil of the required length, and if there are two truss rods to be used, the wire is to be doubled like the wire 5*, in Fig. 2, 100 and the loop 27 formed by twisting the wire of the loop around a few times, the loop then being placed on an arm between the collar 3 and the rail, the nut 4 being removed for allowing said connection to be made. The free ends of the wire are now run through the spreaders, whether the spreader is the 105 single block 15 or the pieces 17 or 18. The wires are then to be connected with their screw eyes by passing them through and twisting the ends around in a well known 110 manner. Both ends of the truss rod having been formed and connected as above described, the turnbuckles can be applied and turned until the desired tension is produced in the rods.

The tension upon the truss rods can be increased or diminished by means of the turn- 120 buckles, or by turning the nuts 14 on the strut bolts. The action of the truss rods upon the rail circumferentially of it, can be controlled upon a rail formed of pipe by the position of the bracket around the pipe, and 125 upon a four sided rail, by the position transversely of the rail of the strut bolt and its spreader. In Fig. 1, the truss rod is formed in the usual manner, of a single piece of wire from the turnbuckle to the end of the rail 130

which method produces as good results as the method shown in Fig. 2, but it is not as easy to apply or make, the thread upon the short screw eyes being much easier to make than upon a piece 10 or 15 feet long, and the twisted loop connection of wire and screw eye is easily made.

In wetting the awning cloth, the rail is caused to bend inward and downward in consequence of the additional weight, and in drying, it is likely to occur that the shrinkage takes place when the awning is down for use, when its shrinkage will pull the rail upward, but there is no likelihood of its bowing the rail outward. In this case an additional tension can be given the lower one of the truss rods by lengthening the space on the strut bolts between the brackets and spreader pieces, or if but one rod is being used, by moving the position of the truss rod spreader downward, relative to the rail the necessary amount for bringing the rail into a straight line.

Having described our invention, what we claim and desire to secure by Letters Patent, is,—

1. In a truss rod construction and adjusting device, a strut for spreading the truss rod from the member to be trussed, consisting of a bracket adapted to be secured upon said member, means for securing the bracket to said member, a slot through the bracket, longitudinally thereof, adapted for the passage through it of a bolt and for its retention within said slot, means for preventing the turning around of the bolt within the slot, a nut upon the bolt for clamping the bolt and bracket together in any position within the length of said slot, two nuts spaced apart upon said bolt and from the first named nut, a truss rod holder and spreader, mounted upon said bolt and clamped between said two nuts, a passage through said holder and spreader for a truss rod, said holder and spreader being adjustable nearer to and farther from the member to be trussed within substantially the length of said bolt by means of said two nuts, and also, adjustable transversely of said member within the length of said slot in the bracket by means of the first named nut.

2. In a bracket for attachment to a member to be trussed, provided with two arms extending parallel with each other for inclosing opposite sides of said member, a greater space between said arms than the dimension of the member to be trussed, said space being adapted to receive rectangular shaped filling pieces of different thickness on opposite sides of the member to be trussed, whereby the changing of their positions one for the other, will change the position of the bracket, transversely of said member to be trussed the difference in the thickness between said two pieces and necessitate the

use of but a single set screw for holding said filling pieces, and the member to be trussed, in position.

3. A bracket for attachment to a member to be trussed, means for securing it to said member, a slot arranged lengthwise of said bracket adapted for the passage through it of a threaded strut bolt, a shouldered seat on opposite sides of said slot for receiving the head of said bolt for holding the bolt from turning around therein, a nut upon said bolt for clamping the bolt within the bracket, two nuts upon said bolt, spaced apart and from the first named nut, and a truss rod holder and spreader, mounted upon the bolt between said two nuts and clamped between them.

4. In a truss rod device for straightening the sag in, and sustaining the front rail of an awning, or other similar article, a plurality of struts for spacing the truss rod from the member to be trussed, spaced apart intermediate the ends of said member, consisting each of a bracket having means for securing it upon the member to be trussed, a slot arranged lengthwise of the bracket and transversely of said member to be trussed, one or more threaded bolts extending outward from each bracket through said slots, each bolt having a head between the member to be trussed and the bracket, a nut upon each bolt for clamping it to a bracket in any position within the length of said slot, two nuts spaced apart and from the first named nut upon each bolt, truss rod holder and spreader devices mounted upon each bracket and held in position upon a bolt by means of said two nuts, each of said holder and spreader devices having means for the engagement loosely with it of a truss rod, a truss rod device for the member to be trussed, consisting of one or more turnbuckles having each a right hand thread at one end and a left hand thread at the other, wires connected with each end of the member to be trussed, and means for connecting the wire and a turnbuckle.

5. In a truss rod for straightening the sag in, and sustaining the front rail of an awning, or other similar article, a plurality of struts for spreading the truss rod from the member to be trussed, spaced apart intermediate the ends of said member, consisting each of a bracket having means for securing it upon the member to be trussed, a slot arranged lengthwise of each bracket and transversely of said member to be trussed, one or more threaded bolts extending outward from each bracket through said slots having each a head between the member to be trussed and the bracket, a nut upon each bolt for clamping it to a bracket, in any position within the length of its slot, two nuts spaced apart and from the first named nut, truss rod holder and spreader devices

mounted upon each bracket and held in position upon a bolt by means of said two nuts, each of said holder and spreader devices having means for the engagement with it, 5 loosely, of a truss rod, a truss rod device for the member to be trussed, consisting of turnbuckles having each a right hand threaded screw eye engaging one end and a left hand threaded screw eye engaging the 10 other end of each turnbuckle, and two wires doubled, one for each end of the member to be trussed having a loop formed at the point of said doubling in each wire and engaging with the member to be trussed near its ends, 15 the free ends of each doubled wire engaging loosely with one or more holder and spreader devices, and being then connected with a screw eye of the turnbuckle by passing it through the screw eye and twisting it 20 around itself.

6. In a truss rod construction and adjusting device, two truss rods, two screw eyes for each turnbuckle for connecting and tightening each truss rod, and a suitable 25 strut carrying means for spacing the truss rods from the member to be trussed and the rods from each other, said truss rods consisting of a piece of wire for each end of the member to be trussed, doubled, and a loop

formed at said doubling point for its con- 30 nection with said member, each of their free ends intermediate their points of connection with said member to be trussed and their turnbuckles and screw eyes passing through said truss rod spacing means, and 35 being then connected with a screw eye.

7. In a truss rod construction and adjusting device, two truss rods, a turnbuckle for connecting and tightening each truss rod, and a suitable strut carrying means for 40 spacing the truss rods from the member to be trussed and the rods from each other, said truss rods consisting of a piece of wire for each end of the member to be trussed, doubled, and a loop formed at said doubling 45 point for its connection with said member, each of their free ends intermediate their points of connection with said member to be trussed and their turnbuckles passing through said truss rod spacing means, and 50 means for connecting each of said free ends of the wire with a turnbuckle.

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