

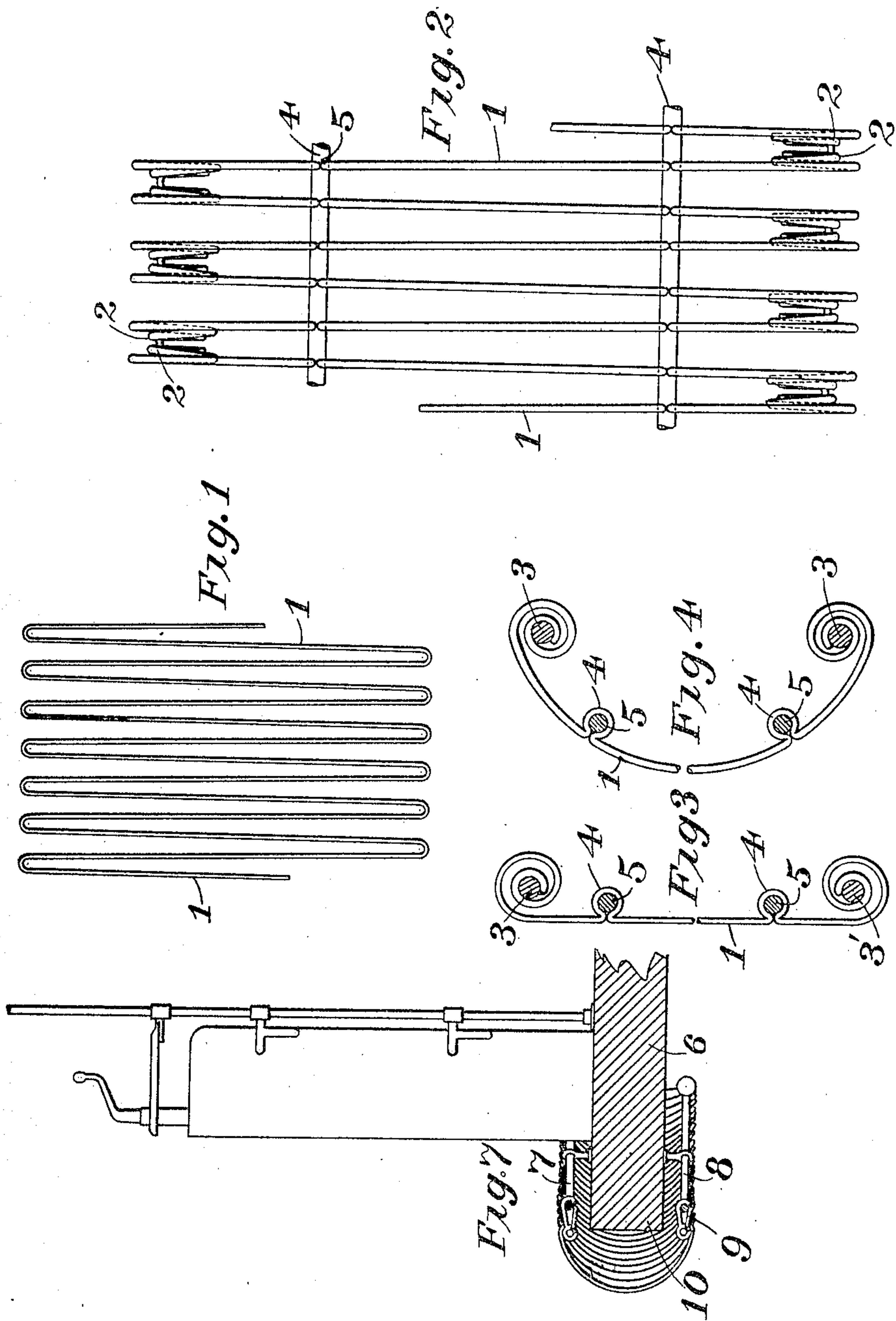
G. HIPWOOD.
BUMPER GUARD.

APPLICATION FILED AUG. 10, 1908.

920,060.

Patented Apr. 27, 1909.

2 SHEETS—SHEET 1.



Witnesses:
David J. Halsh.
Ewen C. McIntyre

George Hipwood, Inventor
By *Albert Stetson* Attorney

G. HIPWOOD.

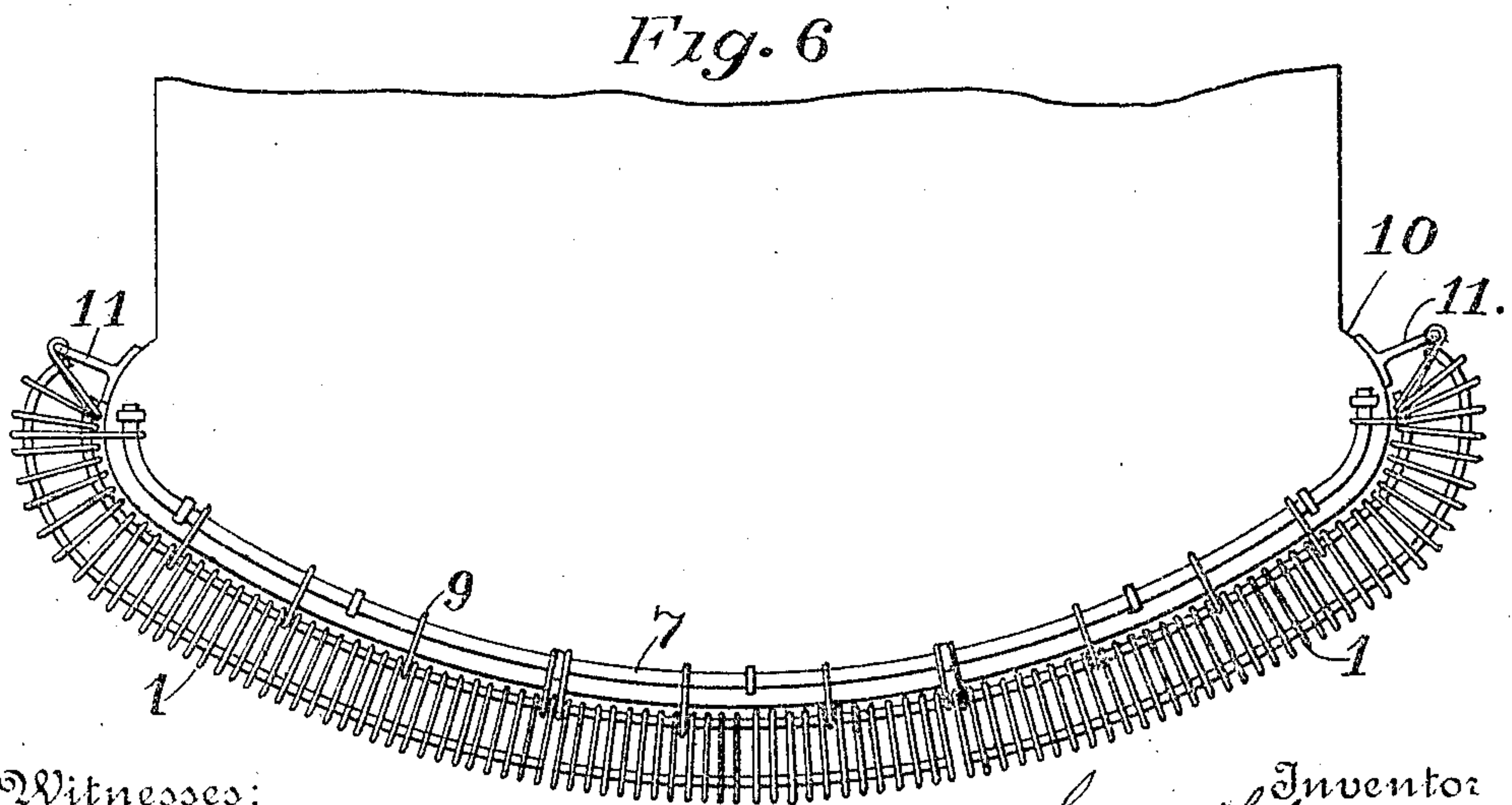
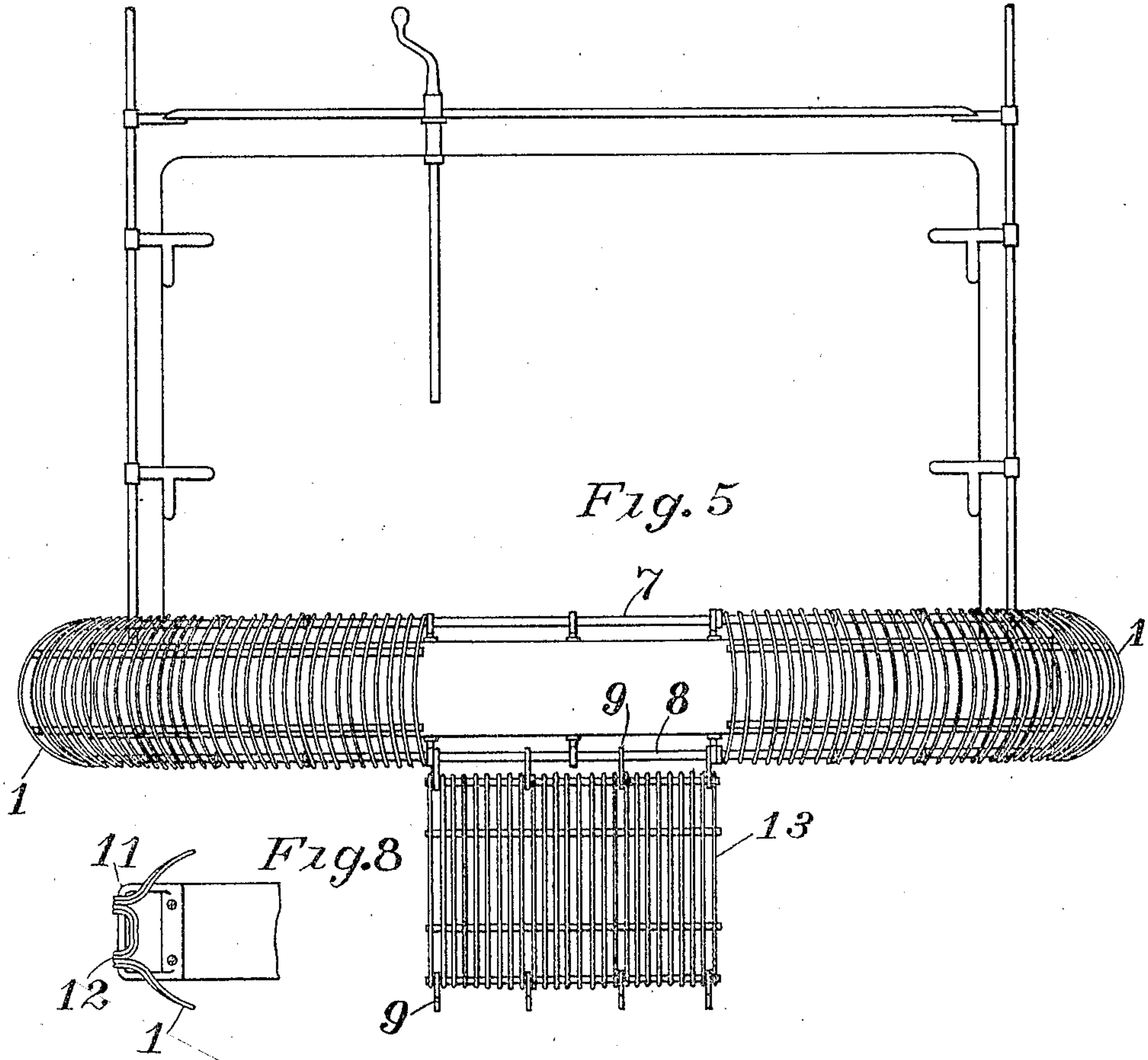
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UNITED STATES PATENT OFFICE.

GEORGE HIPWOOD, OF LAKEPORT, NEW HAMPSHIRE.

BUMPER-GUARD.

No. 920,060.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed August 10, 1908. Serial No. 447,874.

To all whom it may concern:

Be it known that I, GEORGE HIPWOOD, a citizen of the United States, and a resident of Lakeport, in the county of Belknap and State of New Hampshire, have invented certain new and useful Improvements in Bumper-Guards, of which the following is a specification.

My invention relates to a bumper, or buffer, guard adapted to be used on power propelled vehicles.

It relates further to a new and improved guard, as light in construction as is consistent with strength, cheaply manufactured, rapidly attached to and detached from the bumper, and automatically held in place when adjusted thereon.

It relates also to a buffer-guard, which, being capable of yielding simultaneously in a horizontal and transverse direction, (but against properly proportioned springs), so distributes the direction of the blow that shocks are minimized, and a yielding, resilient cushion provided for any object that would, without the guard, be dashed violently against the solid bumper.

My invention relates particularly to a bumper-guard of a new and improved construction, formed of spring steel wire (or equivalent material), preferably in one continuous piece, though for certain purposes, a portion may be pivotally swung down out of the main body of the guard. Into the body of the guard there are fashioned during construction such spring-acting elements that the guard holds itself automatically in operative position at all times when attached to the bumper, and gradually, yet firmly, returns to its original shape when distorted.

In the accompanying drawings, forming a part of this specification: Figure 1 shows the condition of the continuous wire after being subjected to the first step in the process of manufacture; Fig. 2 shows the second state, in which doubled springs have been formed in the top and bottom loops of Fig. 1, with two of the frame-wires in place; Fig. 3 is an end view of one member of Fig. 2, showing sections of the four frame-wires; Fig. 4 is a similar view to Fig. 3, showing the shape assumed by the guard when attached to the bumper; Fig. 5 is a front elevation of the guard, showing the means for holding it in place, and also a portion of the guard dropped down to allow the car to receive a

trailer, for instance, without injury to the guard; Fig. 6 is a top view looking down upon the guard and buffer; Fig. 7 is a cross-section through the bumper and the guard-supporting rods, showing also an end view of a portion of the guard and clip-hooks by which it is connected to the supporting-rods, and Fig. 8 shows the guard-supporting bracket and a portion of the hook-shaped, doubled-over ends of the guard-forming wire.

Referring to the drawings:—1 is the spring wire of which the body of the guard is composed, (shown in Fig. 1 in the first step of formation). The top and bottom sides of Fig. 1 are bent into the double spring; 2, through which pass the upper and lower frame wires 3 and 3'. Intermediate between the two side spring coils 2, on the face of wire 1, at a distance, say, of one-third of the width of the guard, there are fashioned loops 4, for receiving the auxiliary frame wires 5, fitting loosely in the loops. To the upper and lower sides of the bumper 6 are permanently fastened, by means of eye-bolts, rods 7 and 8, adapted to receive the clip-hooks 9 attached to the guard frame wires 3 and 3'. At the two extremities of the curved bumper 6 are attached two brackets 11, which are engaged by the hook-shaped doubled-over ends of the guard. These brackets, in combination with the rods 7 and 8 detachably hold the guard under longitudinal and transverse tension, ready to yield in either direction under impact.

To enable the car to be used with a trailer, or to approach a platform end-on, without the necessity of removing the whole guard from its position on the car, I may make the central portion of the guard detachable from the buffer, so that it swings pivotally on the lower rod 8, downward under the projecting buffer and out of the reach of injury.

The guard can be attached to the car in a few seconds, and by the following simple operation: Insert into the brackets 11 the bent-over ends of the guard-wire 1; fasten the clip-hooks 9 on the lower frame wire 3' to the bumper rod 8, then swing the body of the guard upward on 8 as a pivot, and engage the upper set of clip-hooks with the bumper rod 7. To detach the guard, disengage the upper set of clip-hooks, and disconnect the guard from the brackets 11 and the clip-hooks from the lower bumper-rod 8.

My bumper-guard offers many advantages, both structurally and operatively. In my

ordinary construction, the guard is formed of one continuous piece of spring-wire. The frame and longitudinal wires are of the same stock, the size and tension of each and the tension of the guard as a whole depending solely on the choice of stock. The guard is as light as possible, consistent with strength; in its detached condition its flat shape economizes space, its own tension holds it in place, and it can be rapidly attached to and detached from the car. The spirals 2 serve to keep the wire members equally spaced, and their spring action adds to the cushion effect of the yielding wire elements of the guard. The longitudinal frame wires 5 serve mainly to connect the separate wire elements and add strength to the whole guard, but in addition they assist in preventing any one or more wires receiving a shock that would deform the guard. Moreover, the longitudinal wires distribute the tension and bring the guard into action as a whole, thus producing a resilient cushion action. The space between neighboring wires should be such that no portion of a person's anatomy could possibly get through. As said above, when it is desired to attach a trailer, etc., the guard may have its central portion detached from the rest of the frame wire. In this case, detaching the clip-hooks from the upper bumper rod 7, the part 13 straightens out flat under the released tension, and swings pivotally on rod 8 out of harm's way under the car.

Having thus fully described and illustrated my invention, what I claim is:—

1. A bumper guard formed of one continuous piece of spring wire provided with means for rapidly attaching to and detaching from the guard adapted to conform automatically to the shape of the bumper and hold itself in place by its own tension.

2. A bumper guard formed of one continuous piece of spring wire provided with means for rapidly attaching to and detaching from the guard, having its upper and lower edges formed into double spiral springs, substantially as set forth.

3. A spring bumper guard, having its upper and lower edges formed into double spiral springs, longitudinal frame-wires inclosed by said springs, and means for detachably holding the guard in operative relation on the car.

4. A detachable spring bumper guard, having its upper and lower edges doubled over to form spiral springs, a loop fashioned

in the guard-wire intermediate the upper and lower spring edges, and longitudinal wires loosely inclosed by the springs, substantially as set forth.

5. A spring bumper-guard, having its upper and lower edges formed into double spiral springs, longitudinal frame-wires inclosed by said springs, and clip-hooks on said wires for detachably holding the guard in operative relation on the car.

6. A detachable spring wire bumper-guard having its upper and lower edges doubled over to form spiral springs, a plurality of loops formed in the guard-wire intermediate the upper and lower spring edges, and longitudinal wires loosely inclosed by the springs and loops, substantially as set forth.

7. In a bumper-guard, the combination of a number of spring wire elements whose upper and lower edges are doubled over to form spring loops, loops fashioned in the wire elements intermediate the doubled-over edges, longitudinal wires inclosed by the spring and intermediate loops, rods fastened to the upper and lower sides of the bumper, and means detachably connecting the guard to the bumper rods, substantially as set forth.

8. A bumper-guard formed of spring wire, continuous up to the middle portion, said middle portion being detachable from the rest of the guard, and adapted to swing pivotally on the guard supporting rod, substantially as set forth.

9. The combination in a bumper-guard, of a series of spring wire members having loops fashioned in their ends and intermediate between the ends, longitudinal supporting and strengthening wires passing through the loops, rods attached to the top and bottom of the car platform, brackets attached to the curved ends of the bumper and engaging the doubled-over ends of the guard, substantially as set forth.

10. The combination with supporting rods and brackets attached to the car, of a spring wire bumper-guard composed of three sections, the middle section being separately detachable and adapted to swing pivotally on the lower supporting rod, substantially as set forth.

Signed at New York in the county of New York and State of New York this 30th day of July A. D. 1908.

GEORGE HIPWOOD.

Witnesses:

ALBERT STETSON,
DAVID J. WALSH.