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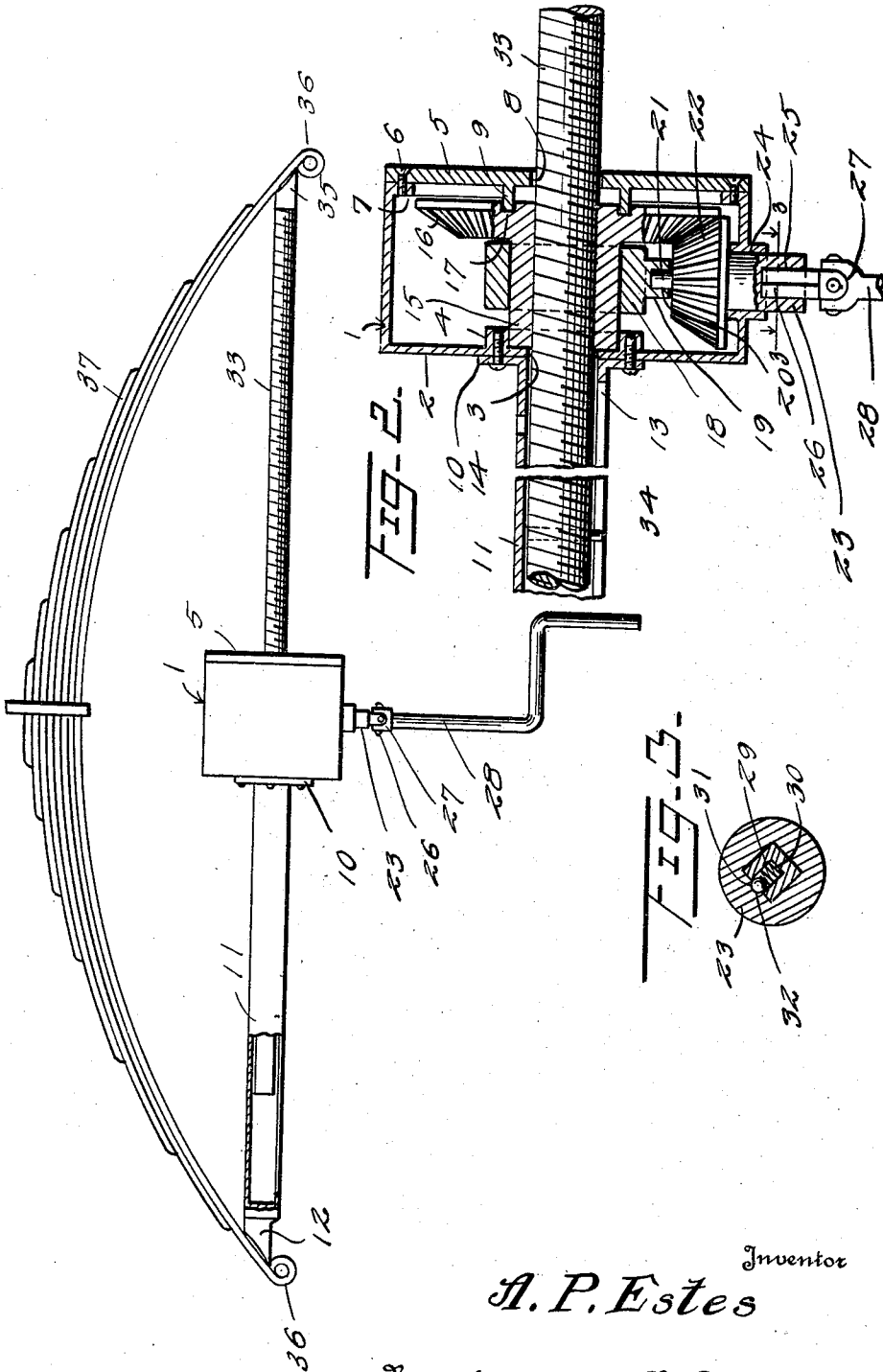
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SPRING EXPANDER

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FIG-1-



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SPRING EXPANDER

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This invention relates to a device for expanding or stretching semi-elliptic motor vehicle springs to facilitate the attachment of the ends thereof to the supporting perches therefor.

The primary object of this invention is to provide, in a manner as hereinafter set forth, a device designed to engage the two ends of a spring and when actuated to force the same apart and hold them in this condition until proper connection is made between the same and the respective supporting perches therefor.

As is well known, considerable difficulty is experienced in placing in position springs of the type used upon Ford motor cars where the supporting perches for the springs are mounted directly upon the vehicle axle and the spring must be expanded or stretched to span the space between these perches.

The present device is designed to overcome the difficulties involved in placing a spring in position by holding it in stretched or expanded condition while the necessary securing members between the ends of the springs and the perches are placed in position.

A further object of the invention is to provide a spring expander of the character described which will be of simple construction, strong and durable, easy to manipulate and comparatively inexpensive to manufacture.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming a part of the present invention with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawing but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawing:—

Figure 1 is a view in side elevation of the spring expanded embodying the present invention showing the same applied;

Figure 2 is a longitudinal sectional view through the gear casing;

Figure 3 is a transverse sectional view taken on the line 3—3 of Figure 2.

Referring to the drawing in detail wherein like numerals of reference indicate corresponding parts throughout the several views, the numeral 1 indicates a gear casing or box forming a part of the present spring expander structure, this box having one side wall thereof, as for example, the wall 2 provided with a central opening 3 and upon its inner face concentric with the opening and of larger interior diameter than the same, an annular gear sleeve retaining flange 4.

The opposite wall 5 of the casing is detachably secured in position by the screws or other suitable securing devices 6 extending therethrough and engaging in suitable lugs 7 extending into the casing from the connecting wall between the walls 2 and 5. This removable wall is also centrally apertured as at 8 and carries upon its inner face an annular gear engaging flange 9 arranged concentric with the opening 8 and of greater interior diameter than the same, as shown. When the removable wall 5 is in position the opening 8 thereof is in alignment with the opening 3 in the opposite wall.

Secured to the outer face of the fixed wall 2 of the gear casing concentric with the opening 3 therethrough and by the lateral surrounding flange 10, is the open end of an elongated sleeve 11, the opposite end of which is provided with the tapered or wedge-shaped head 12.

The sleeve 11 is provided with a longitudinally extending slot 13 which terminates inwardly of the ends thereof and adjacent its inner end the sleeve has formed therethrough diametrically opposite the slot, an opening 14, the purpose of which will be hereinafter more fully described.

Mounted transversely of and within the casing 1 is an interiorly threaded gear sleeve 15 one end of which positions in the annular flange 4 while the other end merges with and forms an integral part of a beveled gear 16, the sleeve opening through the center of the gear body in the manner shown. The outer face of the gear 16 is provided with an annular groove 17 for the reception

of the centering flange carried upon the inner face of the removable wall 5.

The sleeve portion 15 of the gear 16 carries a collar 18 from which an extension 19 projects which is provided with the bearing socket 20 designed to receive the stud 21 projecting from the center of the inner face of the pinion gear 22 arranged adjacent the connecting wall between the walls 2 and 5 and in mesh with the large gear 16. The outer face of the pinion gear 22 carries a hub 23 which projects through a bearing 24 formed in this connecting wall and the outer end of this hub is provided with a socket 25 of polygonal cross section for the reception of the portion 26 of a crank, this portion of course being of same cross sectional design as the socket.

The inner portion 26 of the crank is connected by a universal coupling 27 with the outer or handle portion 28 of the crank and in order to maintain this inner portion in position in the socket of the hub one face thereof is provided with a recess 29 in which is positioned a spring 30 normally forcing outwardly the ball 31 which is held against complete projection from the recess in any suitable manner so that only a portion thereof will project beyond the face of the crank member for engagement in a receiving recess 32 formed in the wall of the hub socket. In this manner accidental removal of the portion 26 of the crank is prevented.

Extending through the opening 8 in the wall 5 of the gear casing is a threaded shaft 33, this shaft being threaded throughout and designed for engagement with the threads formed within the sleeve 15 through which it extends. The inner end of the shaft extends into the sleeve 10 and carries a pin 34 which slides in the groove 13 and prevents the shaft from turning. The outer end of the shaft 33 is provided with the tapered or wedge-shaped head 35 similar to the head 12 carried at the outer end of the sleeve 11.

In operating the spring expander the same is arranged in position between the terminal eyes 36 of the spring 37, the tapered edges of the heads 12 and 35 engaging behind the eyes in the manner shown.

The cranked portion 28 of the operating crank is then rotated to cause rotation of the gears 16 and 22 which action causes the shaft 33 to move out of the sleeve shaft 11. The heads of the device are thus forced in opposite directions against the eyes 36 of the spring forcing the same apart and expanding the spring the desired distance.

When it is desired to remove the threaded shaft 33 it is first threaded downwardly until the pin 34 is brought into alignment with the opening 14 through the sleeve shaft whereupon a suitable instrument may be inserted through the opening to drive the pin from position. The threaded shaft can then

be completely removed from the gear sleeve 15 and the parts of the device disassembled.

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

1. A spring expander of the character described comprising a casing, a tubular shaft secured to said casing and outstanding from one side thereof, a threaded shaft slidably mounted in the opposite side of the casing and adapted to move inwardly of said tubular shaft, said tubular shaft cooperating with the casing whereby to hold the threaded shaft in axial alignment with the tubular shaft and the casing, gear means in said casing engaging said threaded shaft and wedge shaped spring engaging means mounted on said tubular shaft and said threaded shaft for engagement with the eye portions of the springs.

2. A spring expander of the character described comprising a casing, a tubular shaft secured to said casing and extending outwardly therefrom, a threaded shaft slidably mounted in the opposite side of the casing and extending inwardly of said tubular shaft, said tubular shaft cooperating with the casing whereby to hold the threaded shaft in axial alignment with the tubular shaft and the casing, gear means in said casing engaging said threaded shaft, hingedly mounted operating means for said gear means, and spring engaging means mounted on the outer end portions of said tubular shaft and threaded shafts, said spring engaging means comprising an angularly inclined member adapted for engagement with said spring rearwardly of the eye portions thereof.

In testimony whereof I hereunto affix my signature.

ARTHUR P. ESTES.