A split sleeve clamp member for removable securement about and keying to a rotatable sleeve anchor for a torsion spring. The clamp member includes outer ratchet teeth and a pair of lever members are removably journal ed from the clamp member and include reversible spring-ur ged detent members engaged with the teeth on the clamp member for rotating the sleeve clamp member, and thus the sleeve anchor, in a preselected direction in response to oscillation of the lever members.

3 Claims, 7 Drawing Figures
OVERHEAD DOOR TORSION SPRING ADJUSTING TOOL

The tool of the instant invention has been specifically designed to provide a means whereby the torsion springs on overhead garage doors and the like may be adjusted after installation of the doors.

The tool may be utilized to either increase or decrease the tension on the torsion springs and at the present adjustment of the torsion springs is conventionally accomplished by utilizing a pair of lever pins inserted in bores formed in the anchor sleeve for a torsion spring and opening outwardly thereof in diametrical opposite directions. These lever pins must be handle in unison, and in most instances by two persons, and if the pins are not fully seated within their respective bores or a workman's grasp on one of the pin levers is lost, the associated sleeve anchor will be rotated rapidly under the influence of the associated torsion spring with the result that the remaining lever pin will be thrown outward from the sleeve anchor by centrifugal force with considerable momentum. In addition, certain garages and other overhead door installations do not provide ample spacing adjacent the sleeve anchors for the torsion springs of the door to enable ready access thereto by a pair of workmen equipped with the aforementioned lever pins.

It is accordingly the main object of this invention to provide a tool that may be readily utilized by a single workman in adjusting the sleeve anchors of overhead doors provided with torsion springs.

Another object of this invention is to provide a tool in accordance with the immediately preceding object and constructed in a manner whereby it may be readily operatively associated with a sleeve anchor to be adjustably rotated.

A still further object of this invention is to provide a tool of the split clamp type whereby the tool may be readily operatively engaged with a sleeve anchor independent of shifting of the tool axially of the sleeve anchor.

A final object of this invention to be specifically enumerated herein is to provide an overhead door torsion spring adjusting tool in accordance with the preceding objects and which will conform to conventional forms of manufacture, be of simple construction and easy to use so as to provide a device that will be economically feasible, long lasting and relatively trouble free in operation.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a fragmentary perspective view of the torsion spring door raising mechanism of an overhead door structure with the adjusting tool of the instant invention operatively associated with one of the sleeve anchors of the door raising torsion springs;

FIG. 2 is an enlarged fragmentary vertical sectional view taken substantially upon the plane indicated by the section line 2--2 of FIG. 1;

FIG. 3 is a side elevational view of the tool;

FIG. 4 is a plan view of the tool with portions of the handle levers thereof being broken away;

FIG. 5 is an enlarged fragmentary vertical sectional view taken substantially upon the plane indicated by the section line 5--5 of FIG. 4;

FIG. 6 is a vertical sectional view taken substantially upon the plane indicated by the section line 6--6 of FIG. 4 and on somewhat of an enlarged scale; and

FIG. 7 is an exploded perspective view of the tool.

Referring now more specifically to the drawings, the numerical 3 generally designates a support shaft for a pair of torsion springs 12 and 14 provided to assist in raising and lowering an overhead door (not shown). The springs 12 and 14 are disposed about the shaft 10 and have adjacent ends thereof anchored relative to anchor sleeves 16 and 18 rotatable on the shaft 10 but which may be secured in adjusted rotated position thereon by means of setscrews 20.

The remote ends of the springs 12 and 14 are connected directly to the mechanism (not shown) for counterbalancing the weight of the associated overhead door and the torsion of the springs 12 and 14 is adjusted by loosening the setscrews 20 and rotating the sleeve anchors 16 and 18 relative to the shaft 10 and thereafter retightening the setscrews 20.

As may best be seen from FIG. 2 of the drawings, the shaft 10 is tubular and the sleeve anchors 16 and 18 each include a diametrical bore 22 which opens into the axial bore 24 formed in each sleeve anchor for receiving the tubular shaft 10 there through. Accordingly, the opposite ends of the diametrical bore 22 define radial bores in which lever pins are conventionally inserted for rotating the sleeve anchors 16 and 18 relative to the shaft 10 after the setscrews 20 have been loosened.

The tool of the instant invention includes a split sleeve member referred to in general by the reference numeral 26. The split sleeve member includes a pair of semi-circular sleeve halves 28 and 30 pivotally joined together at one pair of corresponding ends by means of a pivot pin 32 and removably anchored together at the other pair of corresponding ends by means of a similar pin 34. The other pair of ends of the sleeve halves 28 and 30 include registrable apertured portions such as portions 36 and 38 carried by the sleeve halves 28 and portions 40 and 42 carried by the sleeve half 30. The apertured portions 36, 38, 40 and 42 are registered when the sleeve halves 28 and 30 are swung together and the pin 34 is receivable through these registered portions.

The sleeve half 30 includes a radially inwardly projecting anchor pin 44 which is receivable in either end of the diametrical bore 22 and a pair of identical lever members 46 are provided and include split clamp portions referred to in general by the reference numerals 48 on one pair of corresponding ends thereof.

The split clamp portions 48 each includes a pair of semi-cylindrical members 50 and 52 pivotally joined together at one pair of corresponding ends by means of a pivot pin 54 and removably securable together at the other pair of corresponding ends by means of a removable anchor pin 56. The lever members 46 include offset handle portions 58 carried by the semi-cylindrical member 50 and each of the handle portions 58 includes a hollow sleeve portion 60 which opens through the inner arcuate face of the corresponding semi-cylindrical member 50. A ratchet detent 62 is reciprocally in each of the sleeve portions 60 and includes a tooth engageable end including a partial cylindrical cam surface 64 and a partial cylindrical abutment surface 66. The outer end of each sleeve portion 60 defines a diametrically reduced bore 65 through which the stem portion 67 of the corresponding detent 62 is reciprocal.

A compression spring 68 is disposed about the stem portion 67 between the detent head and the shoulder thereof defined at the inner end of the corresponding bore 65 and the outer end of each stem portion 67 defines a right angled portion 72 receivable in either end of a diametrical slot 74 formed in the outer end of each sleeve portion 60.

The outer surface portions of the sleeve halves 28 and 30 define circumferentially spaced rounded ratchet teeth 76 and the surfaces 64 and 66 of each detent 62 are engageable with the teeth 76. Further, it will be noted that the detents 62 are rotatable in their respective bores whereby the right angled portions 72 may be axially shifted beyond the free ends of the sleeve portions 60, rotated 90° and then allowed to seat back in the opposite side as one of the corresponding slot 74.

It will also be noted from FIGS. 5--7 of the drawings that the outer surface portions of the sleeve halves 28 include axially retaining flanges 78 between which the split clamp portions 48 are receivable when disposed about the split sleeve member 26. In operation, the split sleeve member 26 is initially opened and then closed and secured about the sleeve anchor 16 with the pin 44 received in one end of the diametrical bore 22. Then, the split clamp portions 48 of the lever members 46 are secured about the split sleeve member 26 between the flanges 78 and the positioning of the detents 62 is set as desired. Then, the set screw 20 may be loosened to free the anchor sleeve 16.
for rotation relative to the shaft 10. Of course, the setscrew 20 is not loosened until at least one of the lever members 46 has been grasped to prevent rotation of the anchor sleeve when the setscrew 20 is loosened. Then, the lever members 46 may be oscillated so as to rotate the anchor sleeve 16 in the direction indicated by the arrow 80 in FIG. 2 of the drawings. Of course, if it is desired to rotate the anchor sleeve 16 in the opposite direction against the torsion of the spring 12, the detents 62 must be reversed in position.

In any event, as the lever member 46 illustrated in section in FIG. 2 of the drawings is swung downwardly, its abutment surface 66 will engage the adjacent tooth 76 and cause the anchor sleeve 16 to be rotated in a clockwise direction while the teeth 76 of the anchor sleeve 16 engage the cam surface 64 of the detent of the other lever 46 so as to retract the latter each time a tooth 76 is engaged therewith. Then, with the lever member 46 illustrated in section in FIG. 2 of the drawings held in its downward swung position, the other lever member 46 may be swung upwardly to the angular position previously occupied by the lever member illustrated in section before being swung downwardly so as to engage the abutment surface 66 of its detent 62 with the teeth 76. Of course, as the lever members are swung in directions reverse to the direction in which the anchor sleeve 16 is being rotated, the detents 62 will be cammed radially outwardly by engagement of the cam surfaces 64 with the teeth 76.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

I claim:

1. A tool for adjustably rotating the rotatable anchor sleeve to which one end of an overhead door tension spring is anchored, said tool comprising a split sleeve member including means for releasably securing said sleeve member about said anchor with the latter keyed to the former for rotation therewith, said sleeve member including outer circumferentially spaced ratchet teeth and a pair of radially outwardly projecting circumferentially extending opposite end retaining flanges between which said ratchet teeth are disposed, a pair of split clamp portions removably and axially reversibly secured about said sleeve member between said retaining flanges, said split clamp portions including a pair of radially outwardly projecting sleeve portions opening into the interiors of said split clamp portions at their inner ends, a pair of spring urged detent members engaged with said teeth and rotatably and slidably disposed in said sleeve portions and including means cooperation with said sleeve portions for selectively rotatably retaining said detent members in predetermined 180° relative rotated positions during reciprocation of said detent members, said split clamp portions each including a generally radial lever handle offset to one side of the medial plane of said split clamp portion, the radial innermost ends of said handles being curved toward and merging into and anchored to said split clamp portions by said radially outwardly projecting sleeve portions.

2. The combination of claim 1 wherein said split clamp portions each comprise a first semi-cylindrical section rigid with the corresponding lever and sleeve portion and a second semi-cylindrical section having one end thereof hingedly supported from a first end of the first section, the other end of said second section and the second end of the first section including means removably receiving the last mentioned ends together.

3. The combination of claim 1 wherein said split sleeve member includes a pair of semi-cylindrical sections hingedly secured together at one pair of corresponding ends and pivotally secured together at the other pair of corresponding ends thereof, one of said sections including a radially inwardly projecting anchor pin for reception in a radial bore formed in said anchor sleeve.