

M. C. GRANEY.
CONVEYER BELT.
APPLICATION FILED MAY 20, 1908.

912,116.

Patented Feb. 9, 1909.

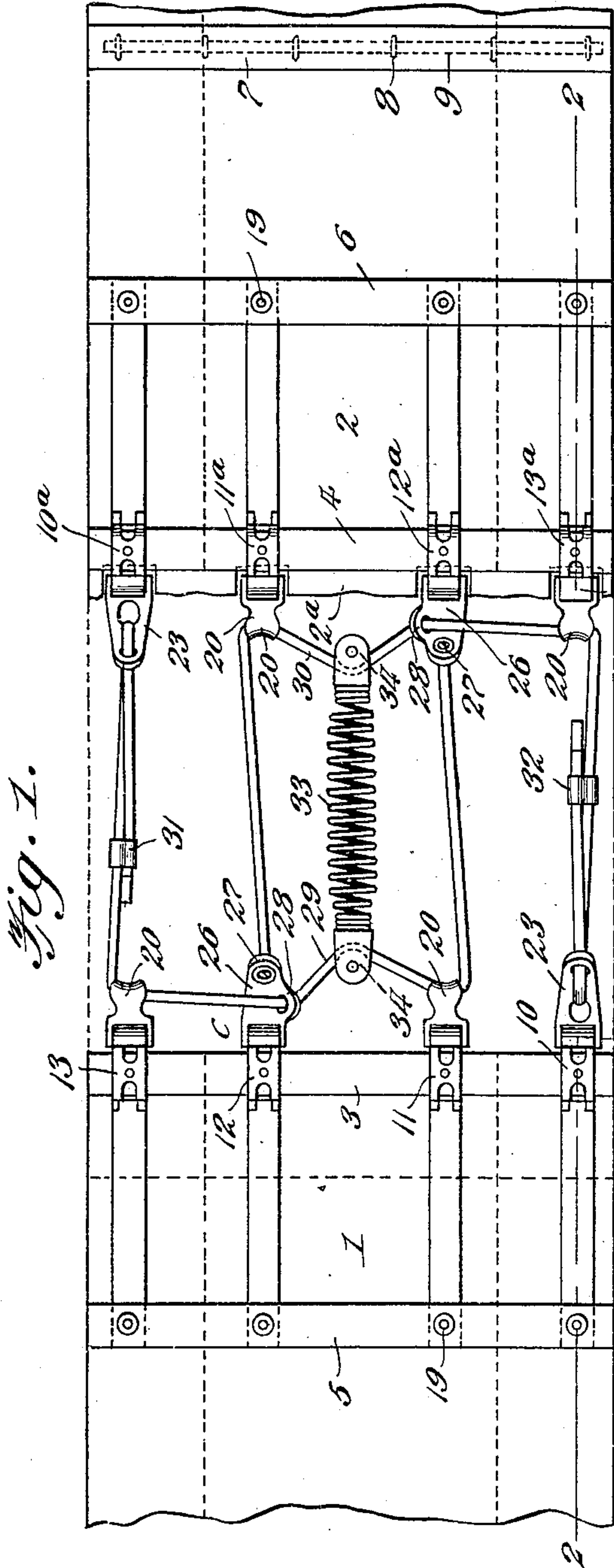


Fig. 1.

Fig. 2.

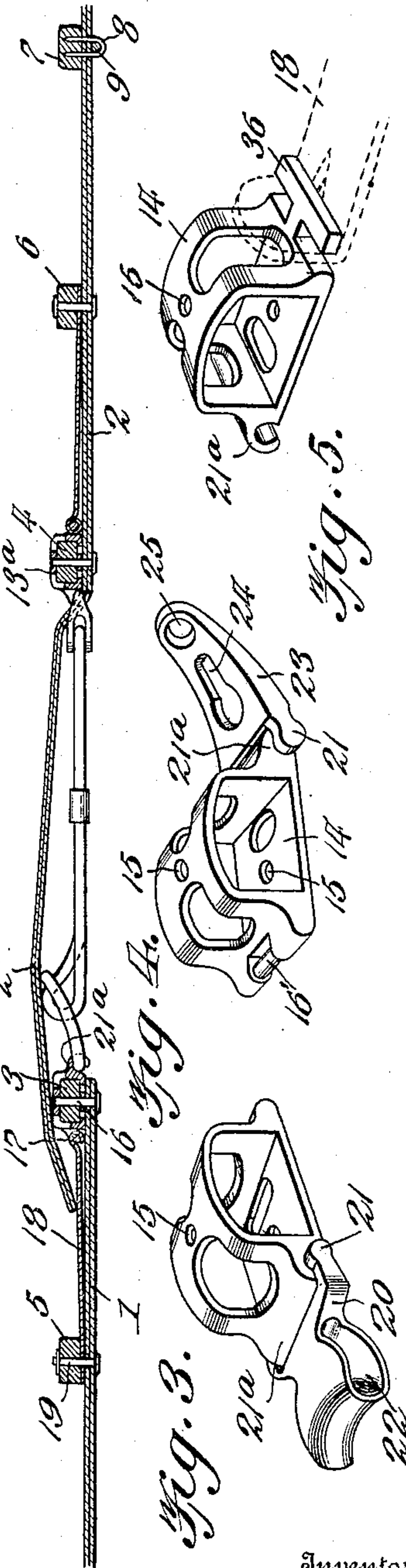


Fig. 3.

Fig. 4.

Fig. 5.

Witnesses

Frank B. Hoffmann

C. C. Hines

Inventor:

Michael C. Graney,

By

Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

MICHAEL C. GRANEY, OF HOOSICK FALLS, NEW YORK.

CONVEYER-BELT.

No. 912,116.

Specification of Letters Patent.

Patented Feb. 9, 1909.

Application filed May 20, 1908. Serial No. 433,890.

To all whom it may concern:

Be it known that I, MICHAEL C. GRANEY, a citizen of the United States, residing at Hoosick Falls, in the county of Rensselaer and State of New York, have invented new and useful Improvements in Conveyer-Belts, of which the following is a specification.

This invention relates to improvements in conveyer belts for grain harvesters and other machines and conveying apparatus generally, and particularly to means for connecting the meeting ends of the belt and for attaching the intermediate cross strips or slats thereto.

The primary object of the invention is to provide a simple and effective construction of means for connecting the ends of the belt which may be readily applied and permits of ready renewal or repairs of the parts thereof, which will automatically take up the slack in the belt and operates without impairing the flexibility of the ends of the belt, and which is adapted to strengthen and relieve the ends of the belt of the pulling strain of the automatic take-up means.

A further object of the invention is to provide a novel construction of means for attaching the intermediate cross bars or strips to the body of the belt in a convenient, firm and secure manner.

With these and other objects in view, the invention consists of the features of construction, combination and arrangement of parts hereinafter fully described and claimed, reference being had to the accompanying drawing, in which:—

Figure 1 is a top plan view of the meeting ends of a conveyer belt constructed and connected in accordance with my invention, the covering flap upon one of the ends of the belt being broken away to disclose the connections. Fig. 2 is a longitudinal section of the same with the flap in operative position. Figs. 3 and 4 are perspective views of two of the coupling brackets. Fig. 5 is a view of a modified form of bracket and stay, a portion of the latter appearing in dotted lines.

Referring to the drawing, the numerals 1 and 2 represent the meeting ends of the conveyer belt, which may be formed of canvas, leather or any other suitable flexible material. Upon the upper surface of the edge of the end 1 and upon the upper surface of the end 2 adjacent its extremity are disposed transverse slats or strips 3 and 4, and disposed in juxtaposition to these slats upon the said respective ends of the belt are other

transverse slats or strips 5 and 6. The upper surface of the belt is further provided with intermediate cross slats or strips 7, arranged at suitable intervals apart between the slats 5 and 6. Each of these strips 7 has a flat base to rest squarely against the surface of the belt and is fastened in position by a series of U-shaped staples or securing pins 8 extending through the belt from the inner surface thereof and entering the strips. Arranged transversely of the inner surface of the belt in line with each strip 7 is a rod 9 engaged and held by the bight portions of the staples and clamped by the same against the belt, said rod acting as a stay to insure a firm clamping engagement of the strip 7 with the belt and to prevent the staples or fastenings from tearing through the belt under the strain or pressure falling upon the strip. In practice, the rod 7 is preferably made of metal of such a character as to be indented by the staples when the latter are driven into the strip, so as to form crimps in said rod by which the latter is held from longitudinal movement and a securer connection between the parts afforded.

Fixed on the slat 3 on the belt end 1 is a series of clips or coupling brackets 10, 11, 12 and 13, arranged at desired intervals apart and upon the slat 4 of the belt end 2 is fixed a corresponding series of clips or coupling brackets 10^a, 11^a, 12^a, and 13^a, corresponding respectively in construction to the first named brackets, but arranged in reverse order thereto. Each clip or coupling bracket has a body portion 14 corresponding in construction except as to the details hereinafter mentioned, which is in the form of a loop for the passage of the strap upon which the bracket is fitted, the relative upper and lower walls of said body portion being provided with registering openings 15 for the passage of a rivet or equivalent fastening 16 to secure the same rigidly to the slats, the rivet also passing through the belt and securing both the slat and bracket thereto. Each bracket is also formed at its rear end to provide a pintle 16 to receive and engage the hooked outer end 17 of a reinforcing strap 18, the straps connected with the bracket on each end of the belt extending rearwardly and longitudinally in contact with the outer surface of the belt and being clamped by the bar 5 or 6, as the case may be, against the surface of the belt, each bar 5 or 6 and the adjacent ends of the straps being rigidly

fastened to the belt by rivets or equivalent fastenings 19. These straps may be formed of resilient strips of metal, so as to allow ample flexibility of the ends of the belt while
 5 connecting the end slats 3 and 4 with the adjacent slats 5 and 6 to stay and reinforce said slats 3 and 4 against the pulling strain of the take-up means hereinafter described, thus obviating liability of the fastenings connect-
 10 ing said slats 3 and 4 and the brackets to the belt from pulling out under such strain and preventing undue stretching of the belt from the same cause.

The brackets 11, 13, 11^a and 13^a correspond in construction, each having an arm 20 formed with a yoked inner end to receive the forward end of the bracket body and provided with inwardly projecting studs 21 engaging recesses in the opposite sides of such
 20 portion of the body to pivotally connect the arm thereto for movement in a vertical plane, the forward portion of the arm being provided with a guide loop or passage 22. The brackets 10 and 10^a are also similar in
 25 construction, each having an arm 23 pivotally mounted thereon in the above described manner and formed with a longitudinal keyhole-shaped slot 24 and an upturned ear or free end provided with an opening 25. The
 30 brackets 12 and 12^a differ in construction from the other brackets to the extent that their pivoted arms 26 are each formed at its outer end with an upturned ear or portion having an opening 27 and provided at one
 35 side with an upturned guide ear 28 having a transverse opening therein.

As before described, the two series of brackets upon the ends 1 and 2 of the belt are arranged in reverse order, the brackets
 40 10, 11, 12 and 13 upon the end 1 extending in one direction across the belt along the bar 3, while the corresponding brackets 10^a, 11^a, 12^a and 13^a upon the end 2 extend in the opposite direction across the belt along the bar
 45 4, which arrangement is employed for the purpose of connecting the ends of the belt in a prescribed manner through the use of intermediate connecting cords or their equivalent 29 and 30. As clearly shown in Fig. 1, one
 50 end of the cord 29 is suitably fastened in the opening 27 of the bracket 12^a, thence extended longitudinally between the belt ends and transversely through the guide passage in the arm of the bracket member 11, the
 55 opening 28 in the bracket member 12 and the guide passage in the arm of the bracket 13, and thence extended longitudinally to the bracket member 10^a, said cord being passed upwardly through the keyhole slot
 60 24 in the arm of said bracket 10^a and drawn into the contracted portion of said slot, thence passed through the opening 25 in said arm and finally connected at its free end with a retainer 31 slidably engaging that portion
 65 of the cord extending between the brackets

13 and 10^a to admit of adjustment in the length of the cord for the purpose of spacing the ends of the belt a desired distance apart. The cord 30 on the other hand is fastened at
 70 one end in the opening 27 of the pivoted arm of bracket 12, thence extended longitudinally between the ends of the belt and passed through the guide passage in the pivoted arm of bracket 11^a, through the opening 28
 75 in the pivoted arm of bracket 12^a and through the guide passage in the pivoted arm of bracket 13^a and thence extended back over to the bracket 10, its free end being engaged with said bracket in the same
 80 manner in which the end of the cord 29 is engaged with the bracket 10^a and finally connected at its extremity with a retainer 32 slidably engaging that portion of the cord extending between the brackets 13^a and 10
 85 to admit of adjustment in the length of said cord for the purpose previously explained with reference to the cord 29. By this means the ends of the cords are respectively permanently attached to the pivoted arms
 90 of the couplings 12 and 12^a and fastened at their opposite ends in the contracted portions of the slots of the arms of the brackets 10 and 10^a, and such cords extended through the guide portions of the other brackets,
 95 thus permitting the respective cords to be adjusted as to length to regulate the distance between the ends of the belt by simply drawing the cords back into the enlarged portions
 100 of the slots 24 of the brackets 10 and 10^a and adjusting the sliding retainers 31 and 32, the pull upon the ends of the belt from the longitudinal strain of the belt normally holding said cord in the retracted portions
 105 of the slots 24 to maintain the cords in adjusted position. A coiled contractile spring 33 extends longitudinally in line with the center of the belt between the portions of the cords 29 and 30 extending transversely be-
 110 tween the respective brackets 11 and 12 and 11^a and 12^a and is provided at its end with guides carrying pulleys 34, through which guides and around which pulleys the said portions of the cords pass, by which the
 115 movable portions of the cords are maintained under a determined pull by the contractile energy of the spring, which thus yieldingly couples the ends of the belt and acts to take up all slack therein as well as to permit temporary elongation of the belt
 120 when excess strain falls thereon in the operation thereof. It will be observed that as the cords are guided for free movement between their ends an easy operation thereof is insured in the contraction and expansion of
 125 the coupling connections, and that the pivoted arms of the brackets also permit proper movement of the connections in the passage of the belt around the guide shafts or pulleys of the conveyer. The extremity of the end
 130 2 of the belt is extended in the form of a

flap 2^a which is of sufficient length to cover the coupling connections and extend over upon the belt end 1 when such portion of the belt forms a part of the upper stretch thereof, thus making the belt continuous. Adjacent the cross slat 4 this flap is properly cut away to permit the coupling brackets carried by said slat to project under and through the flap.

It will be seen from the foregoing description that my invention provides a coupling connection between the ends of the belt which insures ample flexibility of the belt at the points where the ends are connected together, and also operates to maintain the belt taut at all times. The coupling connections are also readily detachable to permit of their removal for repairs or the substitution of new parts when occasion requires, and by the use of the straps 18 and their mode of attachment to the ends of the belt, such portions of the belt are strengthened and relieved of a large proportion of the pulling strain to avoid liability of loosening or disconnection of the fastenings of the coupling brackets.

If desired, the body portion of each bracket may be provided with a T-shaped head 36 for connection of the adjacent end of the strap 18 therewith, as illustrated in Fig. 5, the end of the strap being apertured to engage the head in an obvious manner to securely and yet detachably fasten it thereto. Also the straps may be made of spring metal strips, strips of rawhide or strips of any other suitable flexible material.

Having thus fully described the invention, what is claimed as new is:—

1. A belt provided at its ends with coupling members having pivoted arms, the arms of the respective members being provided with retaining and guiding portions, cords engaging said retaining and guiding portions of the arms and extending back and forth between the ends of the belt, each cord having a permanently retained end and a temporarily fastened adjustable end, and a take-up spring engaging the guided portions of the cords.

2. A belt provided at its ends with inner and outer cross slats, coupling members engaging the outer cross slats and provided with pivoted arms having guiding and retaining portions, flexible stays on each end of the belt, said stays being secured at their inner ends with the inner cross slats to the

belt and pivotally connected at their outer ends to the coupling members, cords engaging the retaining and guiding portions of the arms and extending back and forth between the ends of the belt, and a take-up spring engaging the guided portions of the cords.

3. A belt provided at its ends with coupling members, each of said members having an arm pivotally and detachably connected therewith, the arms of said members being provided with guiding and retaining means, cords engaging said guiding and retaining means and extending back and forth between the ends of the belt, each cord having a permanently retained end and a temporarily fastened adjustable end, and a take-up spring engaging the guided portions of the cords.

4. A belt provided at its ends with coupling members having pivoted arms, the arms of the respective members being provided with retaining and guiding portions, cords engaging said retaining and guiding portions of the arms and extending back and forth between the ends of the belt, and a take-up spring engaging the guided portions of the cords.

5. A belt provided at its ends with cross slats, coupling members engaging said slats, each having an arm pivotally and detachably connected therewith, the arms of said members being provided with guiding and retaining means, cords engaging said retaining and guiding means, and a take-up spring engaging the guided portions of the cords.

6. A belt provided at each end with coupling members, cords extending longitudinally and transversely between said members, each cord being fixed at one end to a coupling member upon one end of the belt and adjustably connected with another coupling member upon the same end of the belt and in guided connection with coupling members on the opposite sides of the belt, portions of the cords extending transversely of the belt in the center line thereof, and a contractile spring connecting such portions of the cords.

In testimony whereof I affix my signature in presence of two witnesses.

MICHAEL C. GRANEY.

Witnesses:

WM. J. HYLAND,
ARTHUR J. COLGAN.