C. O. PEARSON.

MULTIPLE METALLIC BELT FOR TRACTION ELEVATORS.

APPLICATION FILED NOV. 25, 1908.

975,790.

Patented Nov. 15, 1910.

Fig. 1.

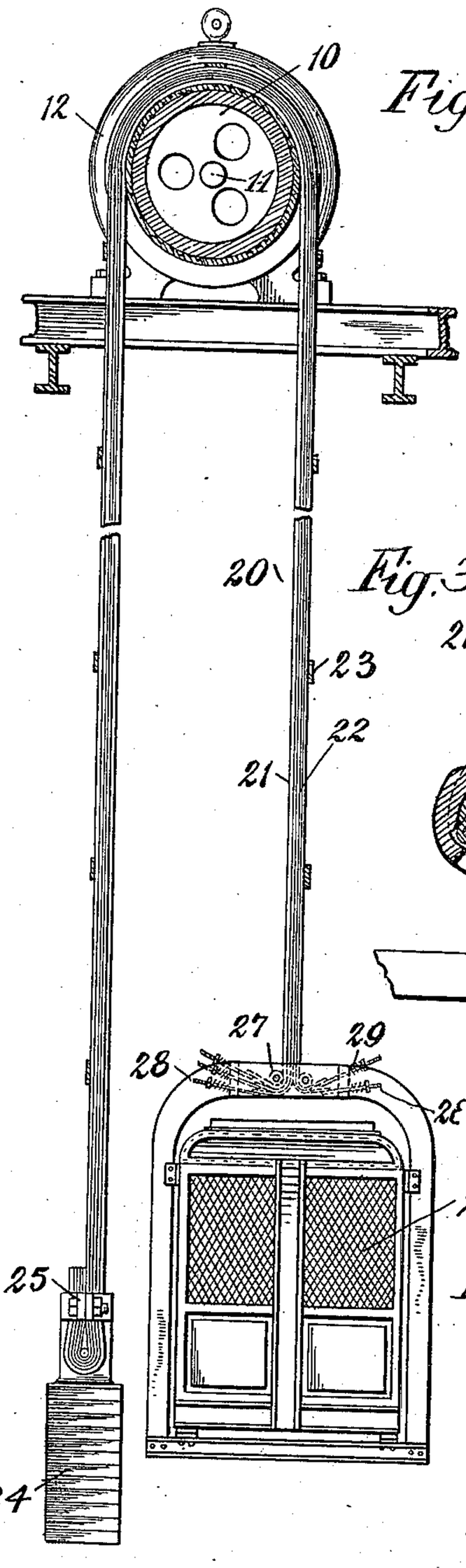

Fig. 2.

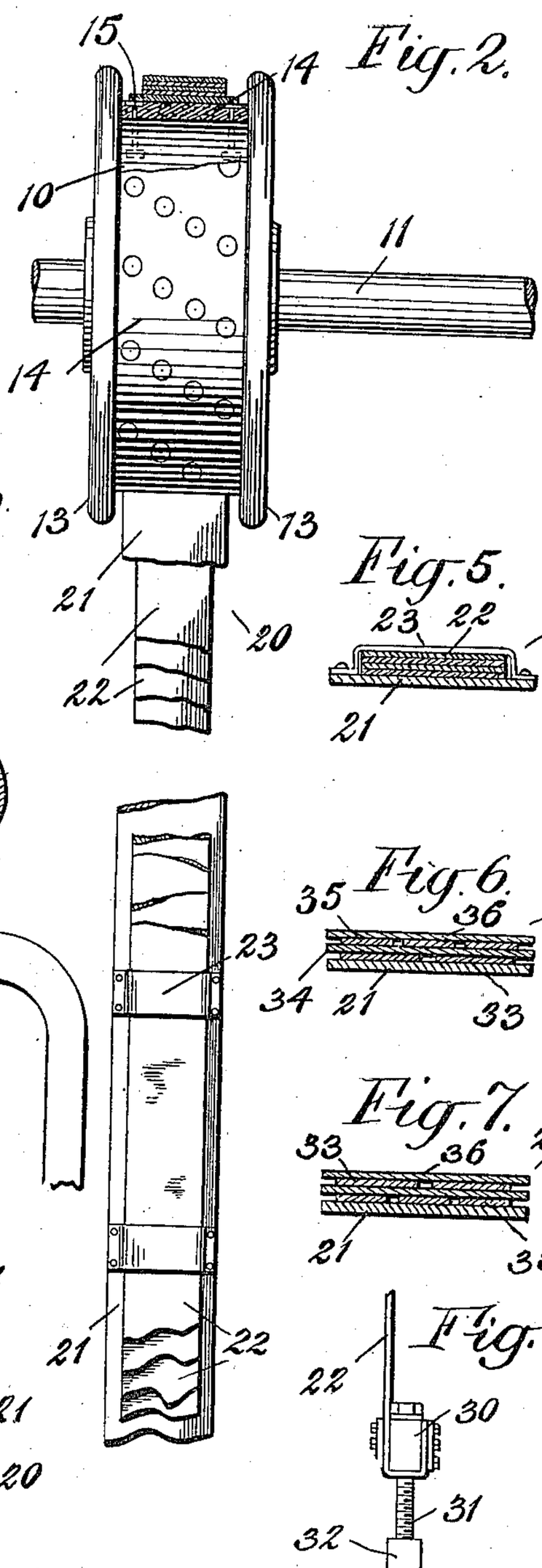

Fig. 3.

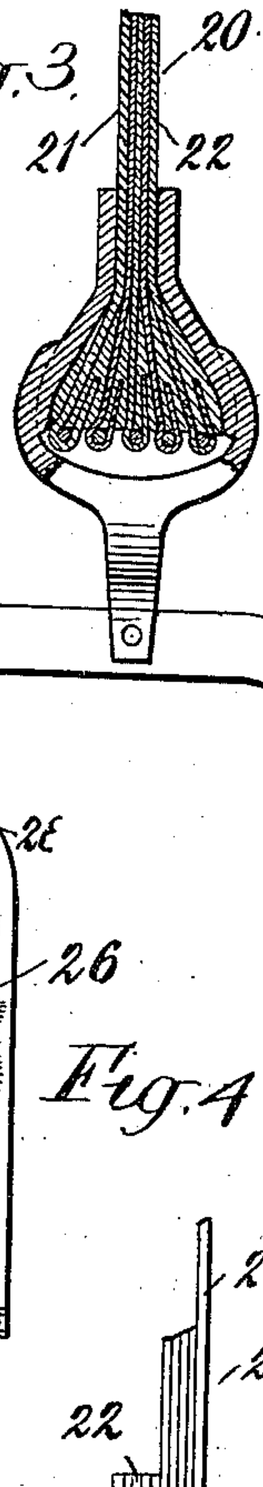

Fig. 4

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

WITNESSES:

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MULTIPLE METALLIC BELT FOR TRACTION-ELEVATORS.

975,790. Specification of Letters Patent. Patented Nov. 15, 1910.

Application filed November 25, 1908. Serial No. 464,417.

To all whom it may concern:

Be it known that I, CHARLES O. PEARSON, a citizen of the United States, and a resident of the borough of Brooklyn, in the county of Kings, city and State of New York, United States of America, have invented certain new and useful Improvements in Multiple Metallic Belts for Traction-Elevators, of which the following is a specification.

My invention relates to an improved belt especially designed for use in conjunction with friction drive or traction elevators, but which may, of course, be used to advantage in various other apparatus, and its object is to provide a novel arrangement of parts by means of which an improved and efficient device for such purposes is obtained in a simple manner.

To these ends my invention resides in the construction and arrangement of parts which I will describe in the following specification, the novel features of which are set forth in the appended claims.

Referring to the drawings, Figure 1 is a side elevation, partly in section, of a simple form of elevator, with my invention applied thereto. Fig. 2 is an end elevation of a driving sheave partly broken away to more clearly show its construction. This figure also shows a portion of the belt. In Fig. 3 one manner in which one end of the belt may be affixed to an elevator-car or other desired device is shown in sectional side elevation. Other methods of fastening are shown in Figs. 1 and 4. Fig. 5 is a cross-section of the driven belt shown in the preceding figures. Figs. 6 and 7 are cross-sectional views of modifications of my invention. In Fig. 8 an adjustable fastening for the end of one of the parts of the belt is shown.

Like characters of reference designate corresponding parts in all of the figures.

10 designates a driving sheave which is mounted upon a shaft 11. This shaft and sheave may, if desired, be driven by a motor 12.

13, 13 designate the flanges of the sheave 10. Between these flanges the peripheral surface of the sheave may be covered with leather or other yieldable material as is shown at 14. This covering or fastening for the sheave may be affixed to the sheave in any desired manner, as, for example, by bolts or rivets 15. The driven member 20 is built up of a plurality of strips of metal of substantially flat cross-section. The first of these, 21, is preferably somewhat thicker than the others and has a width somewhat less than the space between the flanges 13, so that it will not buckle. This belt is adapted to come in frictional contact with the sheave 10 or the covering 14 thereon. In the preferred form of my invention a plurality of other flexible metallic strips 22 are placed upon the inner strip 21. These strips are of less width than that of the first one, and are supported thereon and maintained in parallelism with it by bridge-like brackets 23 affixed to the inner strip at intervals. These brackets do not clamp the various parts of the driven member together but merely act as guides to maintain the various parts in the desired relative positions and to prevent them from slipping out of place. In Fig. 1 each of these metallic strips is affixed to a counterweight 24 by means of a clamp 25. This fastening is shown on a larger scale in Fig. 4. The belt is then carried up to and over the driving sheave 10, which is at the upper end of the elevator shaft, and down to the car 26, to which it is attached. The other end of the belt may be affixed to the elevator-car by some such arrangement as that shown in Fig. 3, in which the ends of each of the strips are bent over in a pocket which is then filled with melted babbitt. This, when allowed to harden, will of course securely fasten the ends of each of the strips to the shackle thus formed.

In Fig. 1 an arrangement for fastening the separate strips to the elevator-car in such a way that the tension on each of them may be separately adjusted, is shown. In this case each of the strips, after passing over one of a pair of guiding rollers 27, is affixed to a separate threaded member 28. Each of these threaded members is provided with a nut and is surrounded by a compression spring 29. It is evident that the tension on each of the separate parts of the belt is dependent upon the compression of its spring, and that this tension may be adjusted by means of the nuts of the threaded members.

The detail shown in Fig. 8 illustrates a method of fastening one of the strips to a block 30, through which a threaded bolt 31 is passed into a member 32. This arrange-

ment also provides means for adjusting the tension on the strip and for taking up any slack from stretching.

In Fig. 6 the driven member 20^A is shown with a pair of narrow metallic strips 33 placed upon the under strip 21. Over these a wider metallic band 34 is placed. Then come three still narrower strips 35 covered by an outer band 36. This arrangement of the strips is inverted in the driven member 20^B shown in Fig. 7. I have added these figures to show that I do not confine myself to any specific arrangement of the parts, but that the driven member may be built up in any desired manner. The element which I have called a belt may be used as a cable or as a belt, and as such has many advantages over such devices as are now in use. The inner member of this belt which comes in contact with the driving sheave is flat, so that it presents a large friction surface. As most of the wear comes upon this inner member, I make it thicker than the others. In order to obtain sufficient flexibility for the belt, a plurality of thin flat strips of suitable metal such, for example, as tempered steel, are used. These may be independently connected to the elevator-car or other device so that a separate strain comes on each of them, and in the event of one giving out, the others will sustain the load, thus making this device safer than cables which give out all at once. The condition of the strips may be readily inspected, and any one of them which shows wear may be replaced. Some of the other advantages of this invention are that a leather facing may be used on the driving sheaves which is not feasible with wire cables or wires, as they cut the leather. The surfaces of the strips lie over each other and do not wear by combined crawling and twisting as is the case in cables. The broad friction surface obtained when used with traction elevators makes one driving sheave enough to hold or to drive the car and counterweight.

I have shown the invention applied to a friction drive elevator of the type sometimes called a traction elevator, as in such an installation it fills a long-felt want. It is clearly applicable to other kinds of apparatus, so I do not, of course, wish to limit myself to this specific use.

In all of the combinations I have shown, the bottom strip is of the maximum width, as this is the preferred arrangement, for it presents the greatest friction surface to the sheave and most effectively supports the other strips. The other strips may be as wide or as narrow as desired, so long as they have sufficient width to bear upon each other and to support the strips of the other layers.

What I claim is.—

1. A belt comprising a flat flexible metallic strip, brackets affixed thereto at intervals, and a plurality of narrower flat metallic strips superimposed upon said first mentioned strip within said brackets.

2. A belt comprising a flat flexible metallic strip, brackets affixed thereto at intervals, and a plurality of thinner and narrower flat metallic strips superimposed upon said first mentioned strip and loosely held thereon by said brackets.

3. In a traction elevator, a car, a belt connected therewith, said belt comprising a plurality of superimposed parallel flat metallic strips, and independent fastenings for each of the strips.

4. In a traction elevator, a car, a belt connected therewith, said belt comprising a plurality of superimposed parallel flat metallic strips, and independent means for adjusting the tension on each of the strips.

5. In a traction elevator, a car, a belt connected therewith, said belt comprising a plurality of superimposed parallel flat metallic strips, and independent adjustable fastenings for each of the strips.

6. In a traction elevator, a car, a belt connected therewith, said belt comprising a plurality of superimposed parallel flat metallic strips, independent yieldable fastenings for each of the strips, and separate means for adjusting the tension on each strip.

7. In a traction elevator, a belt comprising a flat flexible metallic strip, brackets affixed thereto at intervals, a plurality of thinner and narrower flat metallic strips superimposed upon said first mentioned strip within said brackets, and independent anchorages for each of the strips, said anchorages comprising a compression spring for each strip, and means for adjusting the compression of each of the springs.

8. A driving sheave, a facing therefor of yieldable material, a flat flexible metallic strip arranged to run over said sheave, a plurality of thinner and narrower metallic strips superimposed upon said first mentioned strip, and means for maintaining said strips in parallelism.

9. A driving sheave, a leather facing affixed thereto, a flat flexible metallic strip arranged to run over said sheave, brackets affixed thereto at intervals, and a plurality of thinner and narrower metallic strips superimposed upon said first mentioned strip within said brackets.

10. A driving sheave having flanges, a flat leather facing affixed to the sheave, a flat flexible metallic strip of less width than the distance between the flanges, and a plurality of thinner flat metallic strips upon said first metallic strip.

11. A driving sheave having flanges, a flat leather facing affixed to the sheave, a flat flexible metallic strip of less width than the distance between the flanges, brackets affixed to said strip, and a plurality of thin-

ner and narrower metallic strips upon said first metallic strip within said brackets.

12. In a traction elevator, a car, a counterweight, a motor, a driving sheave having flanges, a flat leather facing affixed to the sheave, a flat flexible metallic strip arranged to run over the sheave, a plurality of thinner metallic strips superimposed upon said first mentioned strip, and means for maintaining said strips in parallelism, all of said strips being connected with the car and counterweight.

13. In a traction elevator, a car, a counterweight, a motor, a driving sheave having flanges, a flat leather facing affixed to the sheave, a flat flexible metallic strip of less width than the distance between said flanges arranged to run over the sheave, brackets affixed thereto at intervals, and a plurality of thinner and narrower metallic strips superimposed upon said first mentioned strip within said brackets, all of said strips being connected with the car and counterweight.

14. In a traction elevator, a car, a counterweight, a motor, a driving sheave having flanges, a flat leather facing affixed to the sheave, a flat flexible metallic strip of less width than the distance between said flanges arranged to run over the sheave, brackets affixed thereto at intervals, a plurality of thinner and narrower metallic strips superimposed upon said first mentioned strip within said brackets, all of said strips being affixed to the counterweight, and independent yieldable connections between each strip and the car.

15. In a traction elevator, a car, a counterweight, a motor, a driving sheave having flanges, a flat leather facing affixed to the sheave, a flat flexible metallic strip of less width than the distance between said flanges arranged to run over the sheave, brackets affixed thereto at intervals, a plurality of thinner and narrower metallic strips superimposed upon said first mentioned strip within said brackets, all of said strips being affixed to the counterweight, and independent anchorages between the strip and the car, said anchorages comprising a compression spring for each strip; and separate means for adjusting the compression of each of the springs.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES O. PEARSON.

Witnesses:
ELLA TUCH,
ERNEST W. MARSHALL.