

No. 836,877.

PATENTED NOV. 27, 1906.

C. H. GUESS.
SAFETY DEVICE FOR ELEVATOR CARS.
APPLICATION FILED OCT. 7, 1905.

2 SHEETS—SHEET 1.

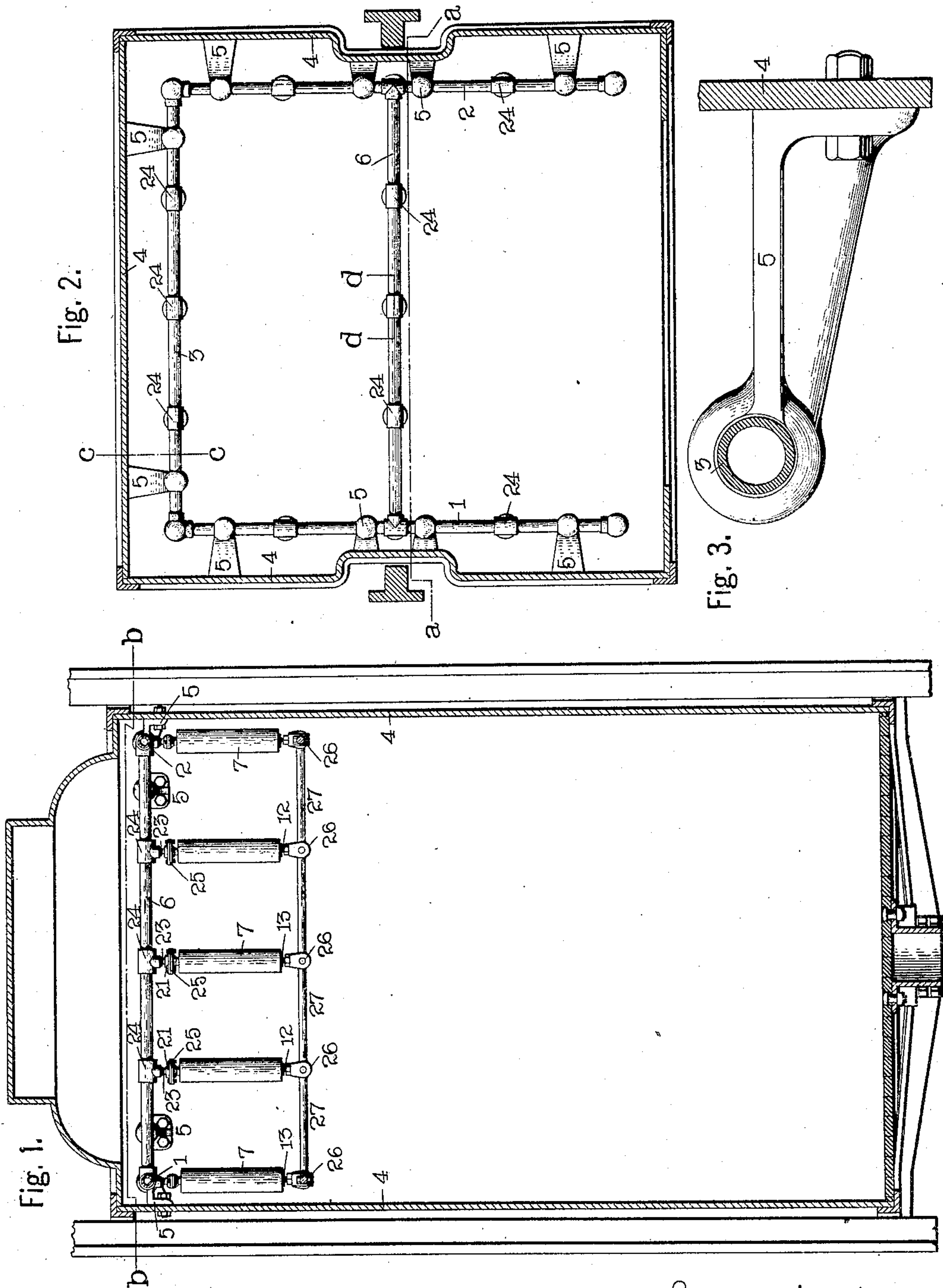


Fig. 1.

Fig. 2.

Fig. 3.

Witnesses.

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2 SHEETS—SHEET 2.

Fig. 4.

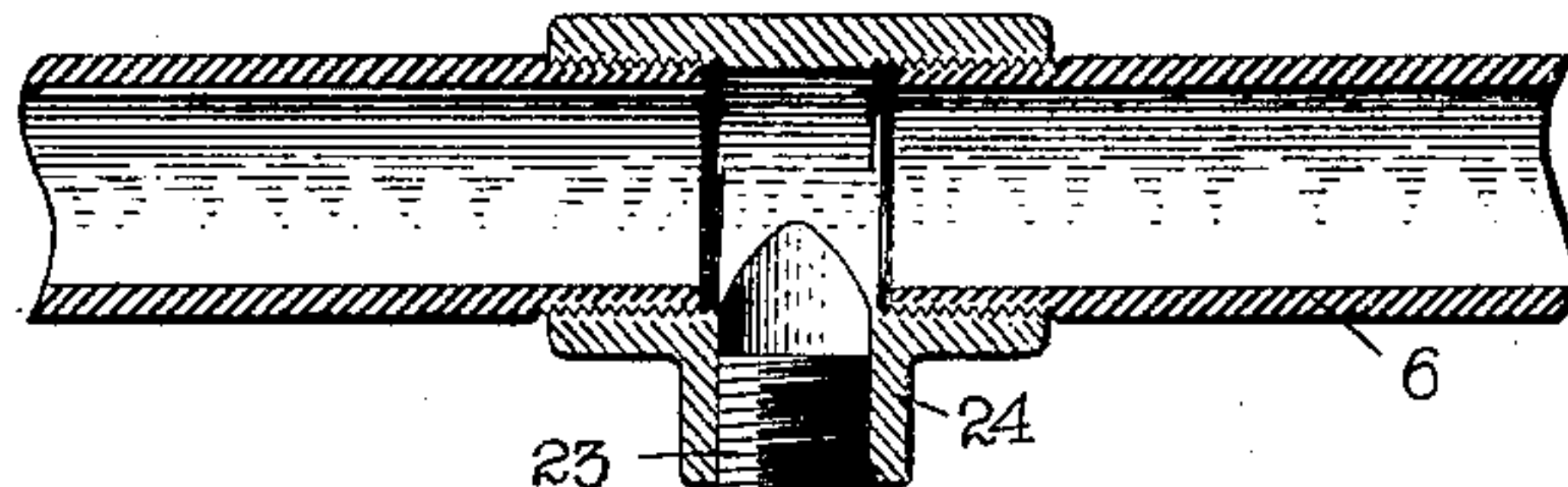


Fig. 5.

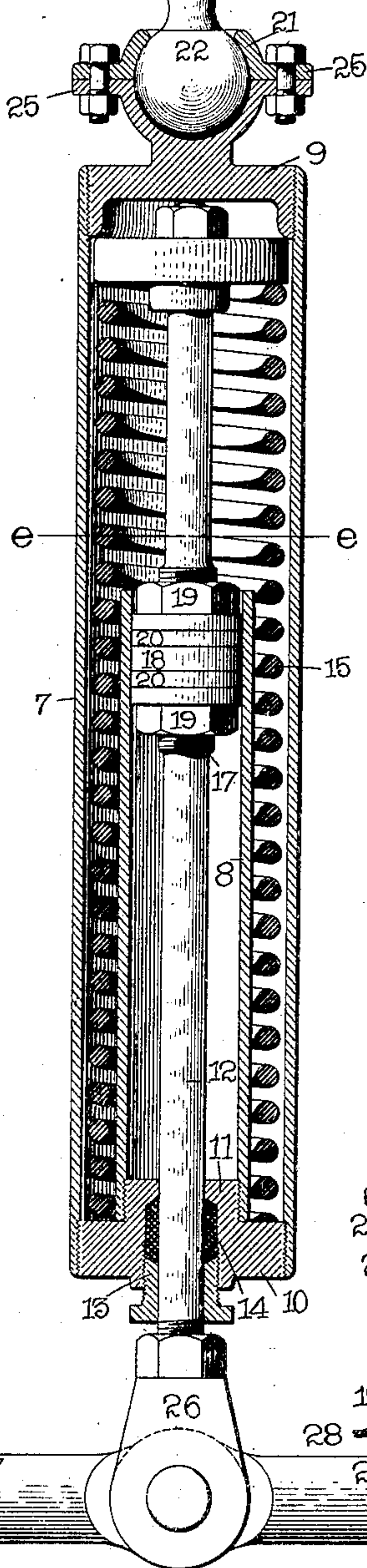
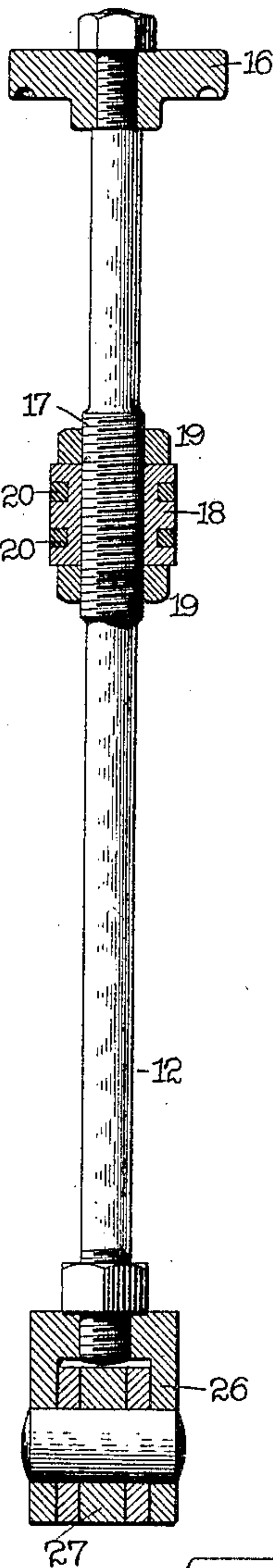


Fig. 6.

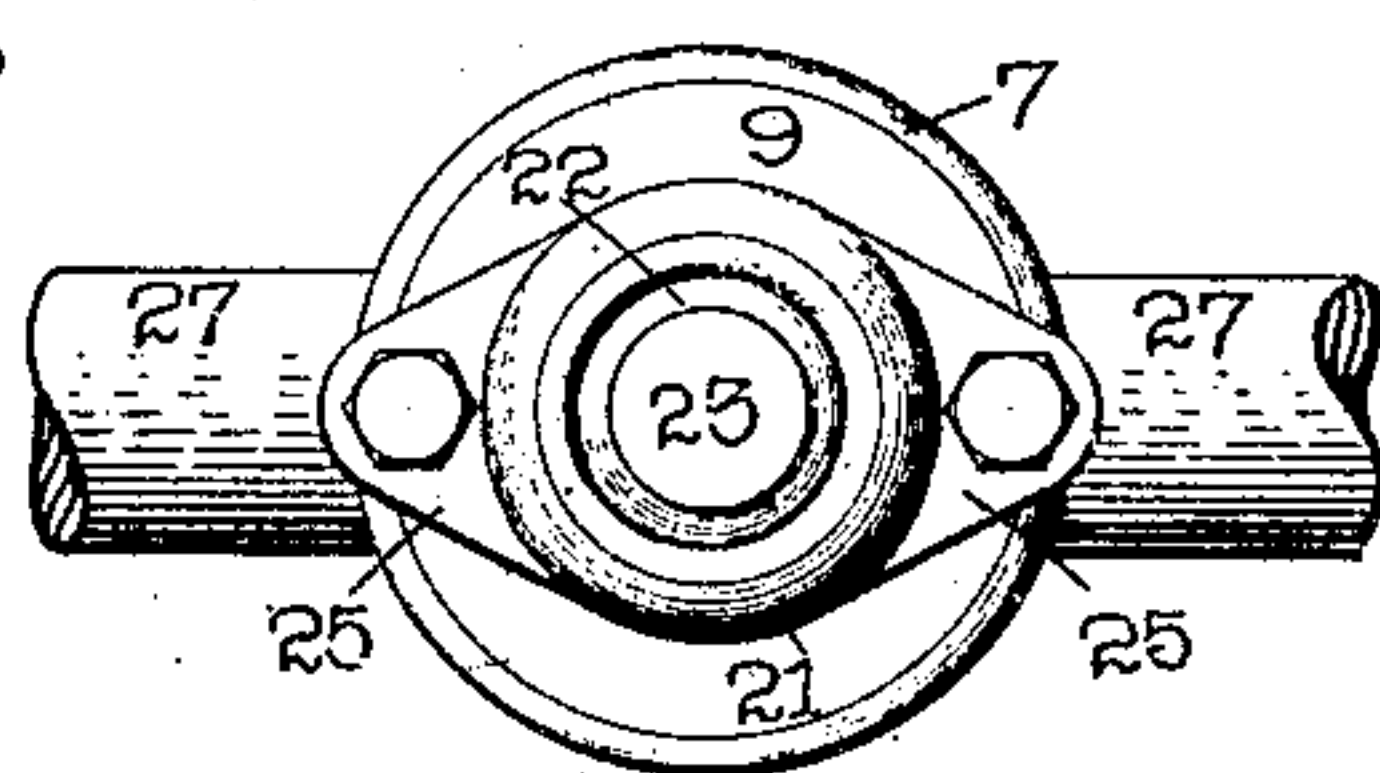


Fig. 7.

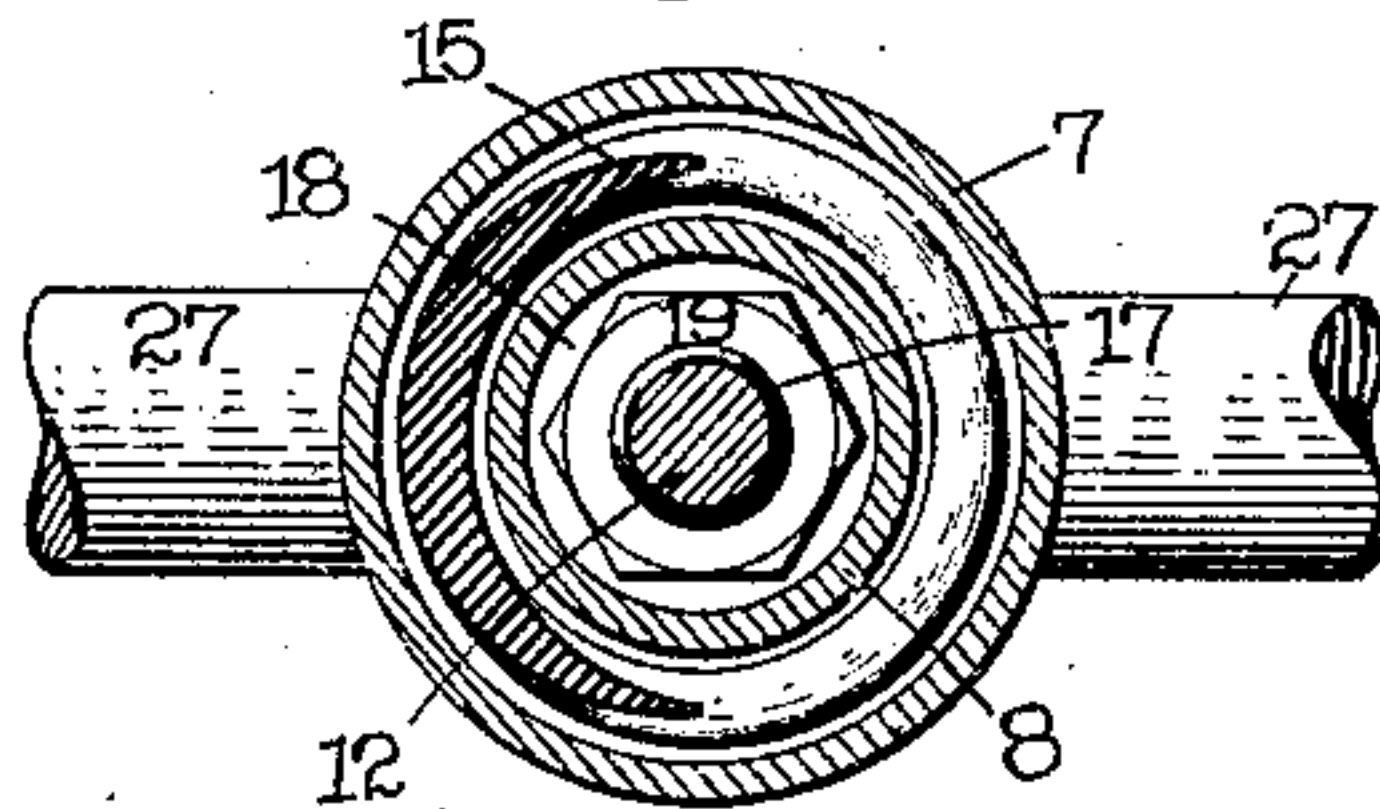


Fig. 8.

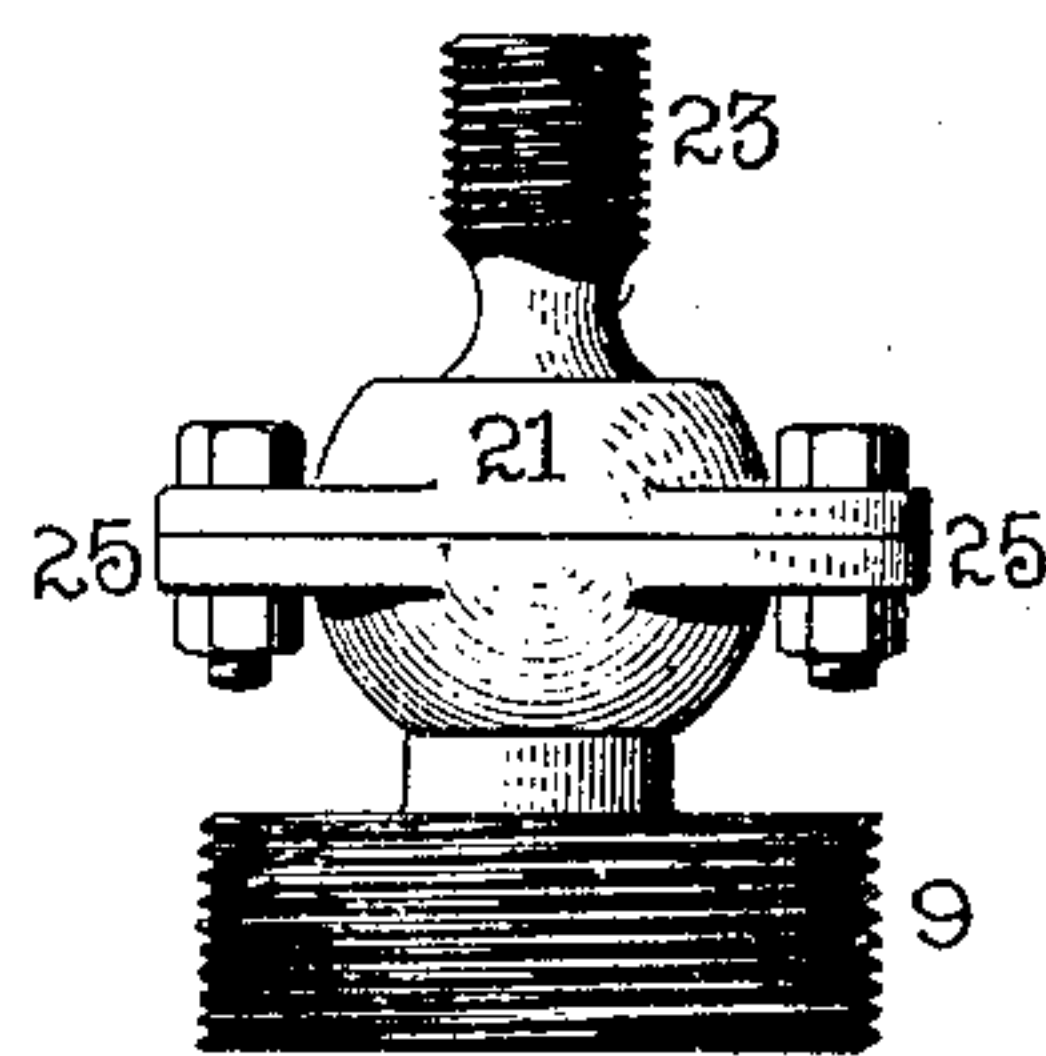
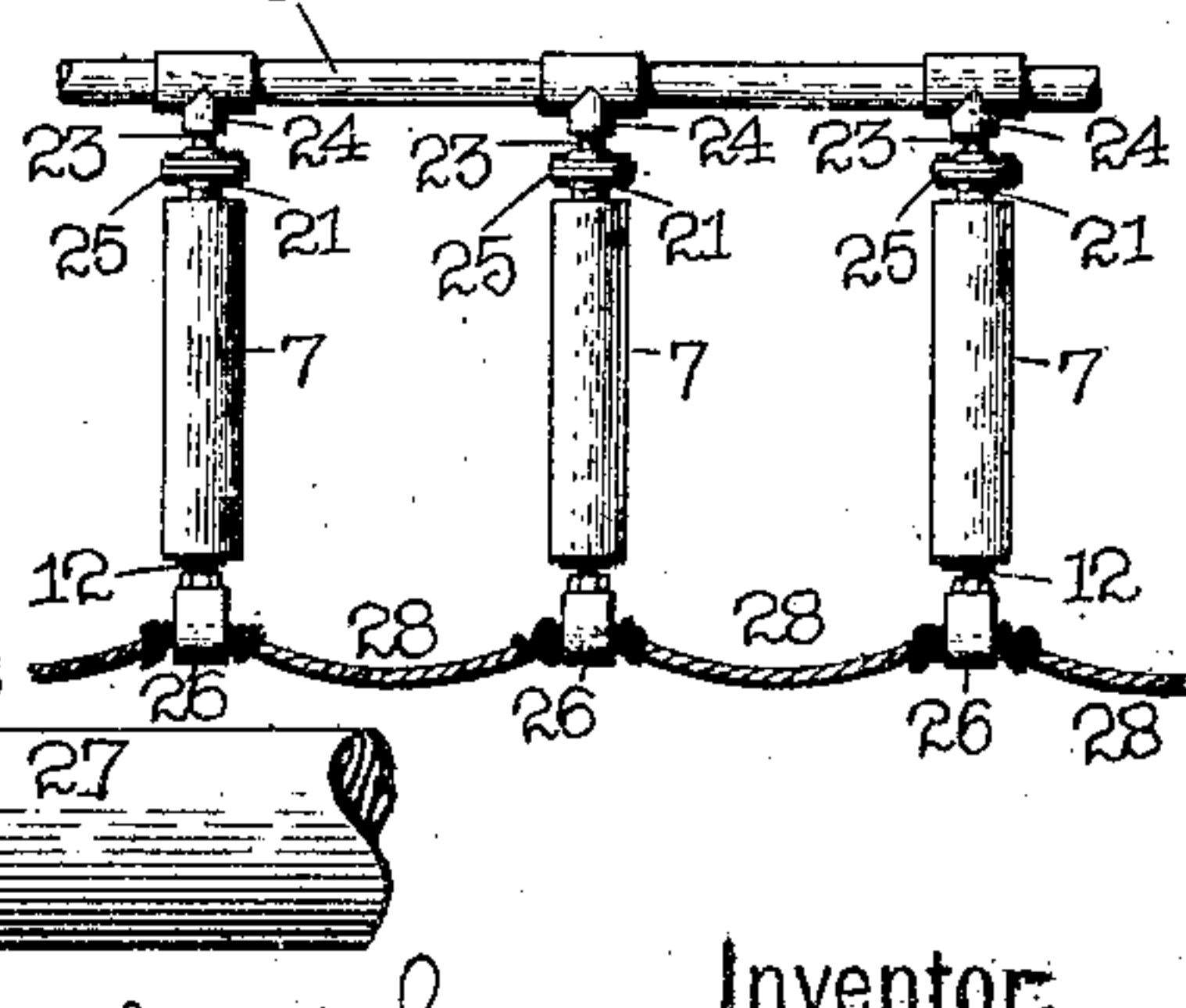


Fig. 9.



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UNITED STATES PATENT OFFICE.

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SAFETY DEVICE FOR ELEVATOR-CARS.

No. 836,877.

Specification of Letters Patent.

Patented Nov. 27, 1906.

Application filed October 7, 1905. Serial No. 281,770.

To all whom it may concern:

Be it known that I, CARL H. GUESS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a certain new and useful Improvement in Safety Devices for Elevator-Cars, of which the following is a specification.

This invention relates to a safety device which is located within an elevator-car and is arranged to partially absorb the shock of a sudden stoppage of the car when dropped by accident or otherwise.

The object of the invention is to obviate in a great measure the danger of serious injuries to occupants of an elevator-car from accidents due to the falling of the car.

The invention also relates to certain details of construction, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 represents a central vertical section on line *a a*, Fig. 2, through an elevator-car equipped with my improved safety device. Fig. 2 is a horizontal section through the elevator-car on line *b b*, Fig. 1, showing a plan view of my improved safety device. Fig. 3 is an enlarged fragmentary section through the elevator-car on line *c c*, Fig. 2, showing a side elevation of one of the supporting-brackets. Fig. 4 is an enlarged central vertical section on line *d d*, Fig. 2, through one of the cushion devices and a fragment of its supporting-bar. Fig. 5 is a detached view of the piston-rod, showing a section through the spring-cap, the piston, and the forked connection. Fig. 6 is a detached top plan view of one of the cushion devices. Fig. 7 is a transverse section through one of the cushion devices on line *e e*, Fig. 4. Fig. 8 is a detached side elevation of the ball-and-socket connection. Fig. 9 is a side view of a portion of my improved safety device, showing the cushions connected by a flexible connection.

In referring to the drawings for the details of construction like numerals designate like parts.

In the preferred form of this invention as illustrated in the drawings a plurality of cushion devices are suspended from horizontal bars supported from the sides of the car

by brackets and have their lower ends connected by a rigid device, such as a bar, or a flexible connection, such as a rope. These devices are located in the upper portion of the car, so that the connecting-rods or the like may be grasped by an occupant or occupants of the car.

The horizontal bars 1, 2, and 3 are supported from the sides of the car 4 by brackets 5, which are bolted thereto. The rear ends of the bars 1 and 2 are coupled to the ends of the bar 3, and a fourth bar 6 is connected at its ends to about the middle of the bars 1 and 2. The bars 1, 2, and 3 are placed a slight distance from the sides of the car, as shown in Fig. 2. A plurality of combined air and spring cushion devices are suspended from these bars, so as to have an almost universal movement therefrom and have their lower ends connected by rods or the like, forming a yielding support which may be grasped by the occupant or occupants of the elevator-car. As these combined air and spring cushions are exact duplicates of each other, but one will be described, reference being had particularly to Figs. 4 to 8. The preferred form of cushion consists of two cylinders, an outer cylinder 7 and an inner cylinder 8, the inner one being both smaller in diameter and shorter in length than the outer one. The upper and lower ends of the outer cylinder 7 are closed by heads 9 and 10, which are screwed into the ends of the cylinder. The lower head 10 has a raised central portion 11, upon which the lower end of the inner cylinder 8 is screwed, said portion 11 constituting a head for the lower end of said cylinder. The lower cylinder-head is provided with a central vertical opening through which a piston-rod 12 passes, said head being also provided with a stuffing-box 13, in which a packing 14 is placed to prevent the escape of air.

A coiled compression-spring 15 is placed within the outer cylinder 7 and encircles the inner cylinder 8. (See Fig. 4.) The upper end of the piston-rod is reduced to form a shoulder, and a spring-cap 16 is screwed thereon and locked in place by a nut. This cap engages the upper end of the spring.

The piston-rod 12 is enlarged and screw-threaded at an intermediate point, as at 17,

and a piston 18 is fastened upon said enlarged intermediate portion of the piston-rod by lock-nuts 19. (See Figs. 4 and 5.) The piston 18 is adapted to operate in the inner cylinder 8 and as it is drawn downward by the piston-rod 12 compresses the air therein, thereby in conjunction with the spring 15 forming a yielding cushion. The piston 18 may be provided with spring piston-rings 20 to render it air-tight. (See Figs. 4 and 5.)

The upper cylinder-head 9 has an upward extension in the form of a socket 21, constituting one member of a ball-and-socket connection which supports the cushion device in such a manner that it may have an almost universal movement. The other or ball member 22 is seated in the socket member 21 and is supported from the horizontal bar by a T connection. The ball member has a vertical extension or stem 23, which is screw-threaded and screwed into the T connection 24, as shown in Fig. 4. The socket 21 is preferably made in two parts, each part having oppositely-extending legs or ears 25, through which bolts are passed to secure said parts together.

A forked block 26 is secured to the lower extremity of the piston-rod 12, and short horizontal rods 27 have their ends pivoted to the forked blocks 26 of each cushion device, so that all the cushion devices are connected one to the other. The horizontal rods 27 form grips which are grasped by the occupants of the car, the cushion devices constituting combined pneumatic and spring cushion which absorb the annoying and often dangerous shock due to the sudden stoppage of the car while traveling at a rapid rate of speed.

Flexible connections may be substituted for the rods 27 in some cases, the preferred form being a rope 28, which is looped from one cushion device to another, as shown in Fig. 9. The rope is secured in place by passing it through an opening in the block 26 and knotting it upon each side thereof.

I claim as my invention—

1. In a safety device for elevator-cars, the combination with an elevator-car of a series of spring mechanisms attached to the interior of the upper portion of the elevator-car, and means adapted to be grasped by an occupant of the car yieldingly supported and depending from the spring mechanisms.

2. In combination, an elevator-car, a device within the elevator-car adapted to be grasped by an occupant, yielding means from which said device is suspended, and a ball connection between the yielding means and the car.

3. In combination, an elevator-car and a safety device suspended in said car and comprising a spring mechanism connected to and supported from the elevator-car by a uni-

versal joint and a hand-grasp depending from said spring mechanism.

4. In combination, an elevator-car and a safety device suspended in said car and including a plurality of cushion devices supported within the upper portion of the elevator-car and a hand-grasping element below and having yielding suspension from the cushion devices.

5. An elevator-car, a plurality of cushion devices suspended within the interior of the upper portion of the elevator-car and connected thereto by universal joints, and a hand-grasping element yieldingly connected to depending portions of the cushion devices, substantially as set forth.

6. In combination, an elevator-car and a safety device suspended in said car and comprising a hand-grasping rod and a combined pneumatic and spring-tensioned mechanism connecting the hand-grasping rod to a suitable portion of the car.

7. In combination, an elevator-car, an upper rod rigidly supported in the upper portion of the interior of the elevator-car, a lower hand-grasping rod, and yieldingly-tensioned mechanism connecting the lower rod to the upper rod.

8. In combination, an elevator-car and a safety device in said car comprising a series of upper horizontal bars rigidly connected to the upper portion of the interior of the car, a series of lower horizontal hand-grasping bars and mechanism yieldingly connecting said lower bars to said upper bars.

9. In a device of the class described, an elevator-car, a series of upper bars rigidly attached to the interior of the elevator-car, a series of cushion devices depending at intervals from the upper bars, and a series of lower hand-grasping bars below and yieldingly supported from the cushion devices.

10. In a device of the class described, an elevator-car, a series of upper bars rigidly attached to the interior of the elevator-car and extending in proximity to the sides and rear of the interior of the car, a series of cushion devices depending at intervals from the upper bars, and a series of lower hand-grasping bars below and yieldingly supported from the cushion devices.

11. In a device of the class described, an elevator-car, a series of upper bars rigidly attached to the interior of the elevator-car and extending in proximity to the sides and rear of the interior of the car and a series of lower hand-grasping bars also extending in proximity to the sides and rear of the elevator-car and yieldingly supported from the upper bars.

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