(No Model.)

2 Sheets—Sheet 1.

F. SCHNIZLEIN.

SAFETY BRAKE FOR ELEVATORS.

No. 316,577. Patented Apr. 28, 1885.

Fig. 1

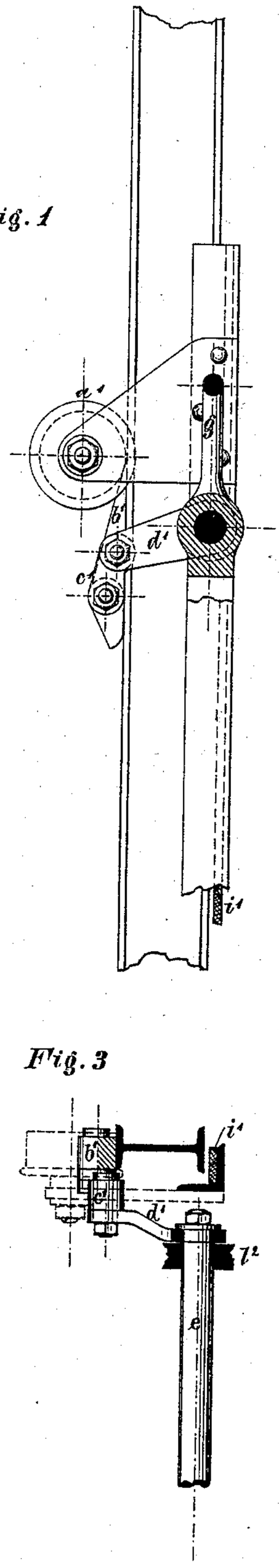

Fig. 3

Witnesses:

Eugen Vogel

Emil Hengel

Inventor:

Friedrich Schnizlein

(No Model.) 2 Sheets—Sheet 2.

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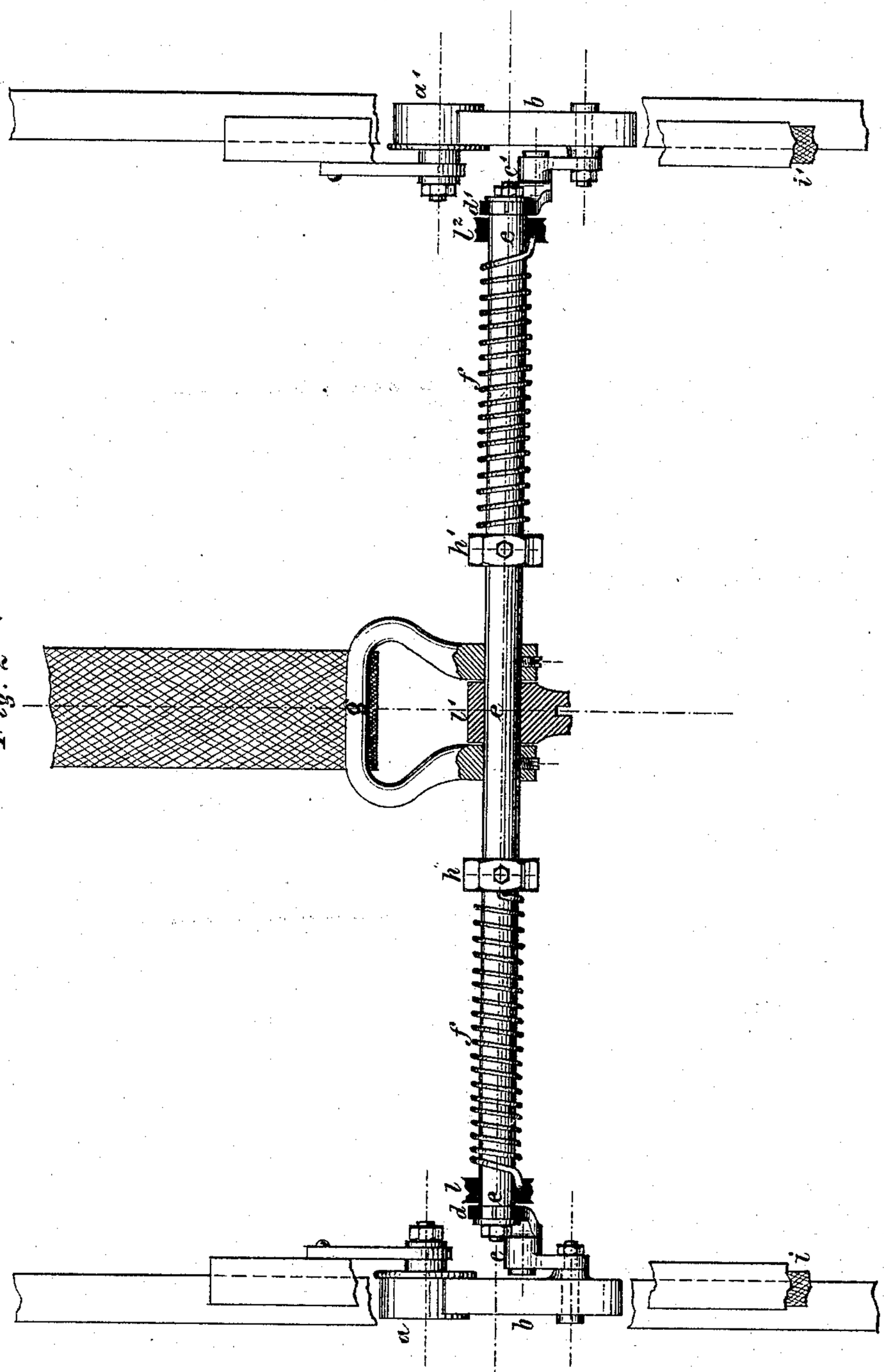

Fig. 2.

Witnesses:
Edgar Tidd
Emil Kenzel

Inventor:
Friedrich Schnizlein

UNITED STATES PATENT OFFICE.

FRIEDRICH SCHNIZLEIN, OF MUNICH, BAVARIA, GERMANY.

SAFETY-BRAKE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 316,577, dated April 28, 1885.

Application filed October 20, 1884. (No model.)

To all whom it may concern:

Be it known that I, FRIEDRICH SCHNIZLEIN, a citizen of the German Empire, and a resident of Munich, Kingdom of Bavaria, Germany, have invented a new and useful Safety-Brake for Elevators or Lifts, of which the following is a specification.

This invention relates to improvements in safety stops or devices for elevators, and has for its object to furnish a simple and efficient mechanism to arrest the downward course of the elevator cage or platform and avoid accidents to passengers or damage or injury to goods in case of the breakage of the elevator belt, rope, or chain.

The invention consists, essentially, in the combination, with the elevator-cage and the guide rolls or pulleys thereof or of friction rollers or pulleys in the absence of such guide rollers or pulleys, of brake-shoes connected with the shaft or bar to which the elevating belt, rope, or chain is attached, said brake-shoes being automatically wedged between the uprights or guides and the guide or friction pulleys or rollers on the breakage of said belt, rope, or chain, substantially as hereinafter fully described, and as shown in the accompanying drawings, in which—

Figure 1 is a central vertical section of so much of an elevator as will be necessary to illustrate my invention. Fig. 2 is a rear elevation, partly broken away, of so much of an elevator as will illustrate my invention. Fig. 3 is a horizontal sectional detail view.

In the drawings, T indicates the upright guides on which the elevator cage or platform runs and by which it is guided. These upright guides, as shown in Fig. 3, are double T rails or irons having the two bearing-surfaces *t* and *t'*. The elevator cage or platform is constructed with or secured to angle corner iron uprights U, the inner face of the laterally-projecting wing or web of which slides in proximity to the flange *t'* of the upright guides T. To the angle-iron uprights U are bolted brackets A that extend forwardly, in which brackets is mounted a friction-roller, *a*, that bears upon the flange *t* of the double T-iron upright guides to guide the cage or platform properly, as more plainly shown in Figs. 2 and 3, the bracket and roller being shown in dotted lines in the latter figure.

In suitable bearings, *l* and *l'*, secured to the roof of the elevator-cage or to a cross-timber of the platform, is mounted a shaft, *e*, that is adapted to rotate freely in said bearings.

Centrally of the shaft is secured by means of set bolts or screws the belt, chain, or rope loop *g*, and at each end said shaft carries a crank, *d*, to the pin of which is connected a link, *c*. To the link *c* is pivoted a wedge-shaped brake-shoe, *b*, held with its attenuated end immediately under the friction-roller *a*, as more clearly shown in Figs. 1 and 2. The arrangement of the wedge-shaped brake-shoes *b* relatively to the rollers *a* and the forward flange, *t*, of the upright guides T is such that the said brake-shoes will slide freely along the face of the guides with their attenuated ends or apices sufficiently close to the periphery of the rollers that a slight forward rotation of the shaft *e* will cause the said end to pass between the periphery of the rollers and the front face of the upright guides; or, in other words, that on the forward rotation of the shaft, which will move the brake-shoes upwardly, the friction-rolls will run onto said shoes and wedge the cage or platform to the upright guides. In order to insure this forward rotation of the shaft *e* under all circumstances when the elevating belt, rope, or chain breaks, I apply actuating steel springs *f* to the opposite ends of the shaft *e*, said springs being rigidly secured at one end to the bearings *l* in which the shaft rotates, and at their opposite end to hexagonal adjusting-collars *h*, rigidly secured upon the shaft by means of set-screws or bolts *h'*, Fig. 2. By means of these collars and a suitable key or wrench the tension of the springs can be regulated or the slack in the tension taken up, so as to impart to the shaft the necessary rotary motion to carry the brake-shoes into position for engagement with the friction-rolls and upright guides.

When the parts described are made of metal, I preferably provide the forward face of the lateral projection of the angle-iron uprights U with a packing or lining of leather, rubber, or equivalent material, *i*, in order to increase the friction between said angle-iron and the

upright guide T, and, if desired, the faces of the brake-shoes that contact with the periphery of the rolls and the outer face of the upright guides may be roughened, thus increasing the friction between the parts very materially.

The arrangement and construction of the described safety appliances or devices for elevators are so simple that their function or operation will be readily understood and need, therefore, not be further described.

It will also be readily understood that the said devices may be readily applied to any existing elevator without any changes in its structure or any material changes in that of its cage or platform. It will also be seen that inasmuch as the safety devices are all carried by and travel with the cage or the platform, and are controlled by the breakage of the belt, rope, or chain, their function is neither dependent on a given distance to be traveled by the cage or platform before its course is checked, nor on the prompt operation of safety devices actuated by the cage itself on an increase in its normal velocity or otherwise.

Having now described my invention, what I claim is—

1. In an elevator, the combination, with the upright guide, the cage, and a friction-brake arranged to travel with the cage and operating in conjunction with the guide, of the suspension device from which the cage is hung connected with and controlling said friction-brake to check the downward course of the cage on the breakage of the suspension device, as set forth.

2. In an elevator, the combination, with the upright guide, the cage, and safety appliances, consisting of a friction-roller and a brake-shoe arranged to travel along the guide with the cage, of the suspension device from which the cage is hung, arranged to control the brake-shoe and cause the same to be carried between the roller and guide on the breakage of said suspension device to check the downward course of the cage, as described.

3. In an elevator, the combination, with the upright guide, the cage, and safety devices carried thereby, consisting of a friction-roller and a brake-shoe arranged to travel along the guide, of the suspension device from which the cage or platform is hung, connected with and controlling the brake-shoe to check the downward course of the cage on the breakage of the suspension device by carrying said shoe between the roller and guide, as set forth.

4. In an elevator, the combination, with the upright guide, the cage, and safety devices connected therewith, consisting of a friction-roller and a brake-shoe arranged to travel along the guide and a rotatable shaft with which said shoe is connected, of the suspension device from which the cage is hung connected with the shaft and appliances, such as described, to rotate said shaft on the breakage of the suspension device and carry the brake-shoe between the roller and upright guide to check the downward course of the elevator, as described.

5. In an elevator, the combination, with the upright guide, the cage, and safety devices carried thereby, consisting of a crank-shaft, a brake-shoe on the crank thereof, and a friction-roller, said brake-shoe and roller being arranged to travel along the upright guide, of the suspension device from which the cage is hung and a spring connected with said shaft, said spring operating to rotate the shaft and carry the brake-shoe between the roller and upright guide to check the downward course of the cage or platform on the breakage of said suspension device, as set forth.

6. In an elevator, the combination, with the upright guide and the cage or platform, of safety devices carried by the latter consisting of a friction-roller and a brake-shoe arranged to travel along the guide and a crank-shaft connected with the brake-shoe of the suspension device and a spring connected with said shaft and operating to rotate the same on the breakage of the suspension device and check the downward course of the cage or platform, and an adjusting collar or nut for adjusting the tension of the spring, as set forth.

7. In an elevator, the combination, with the upright guide, the cage, the suspension device from which the cage is hung, and a friction-brake carried by said cage and operating upon one of the faces of the upright to check the downward course of the cage on the breakage of the suspension device, of a flexible packing connected with the cage and operating in conjunction with the brake upon the opposite face of the guide, as described.

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

FRIEDRICH SCHNIZLEIN.

Witnesses:

JOS. W. HARPER,

EMIL HENZEL.