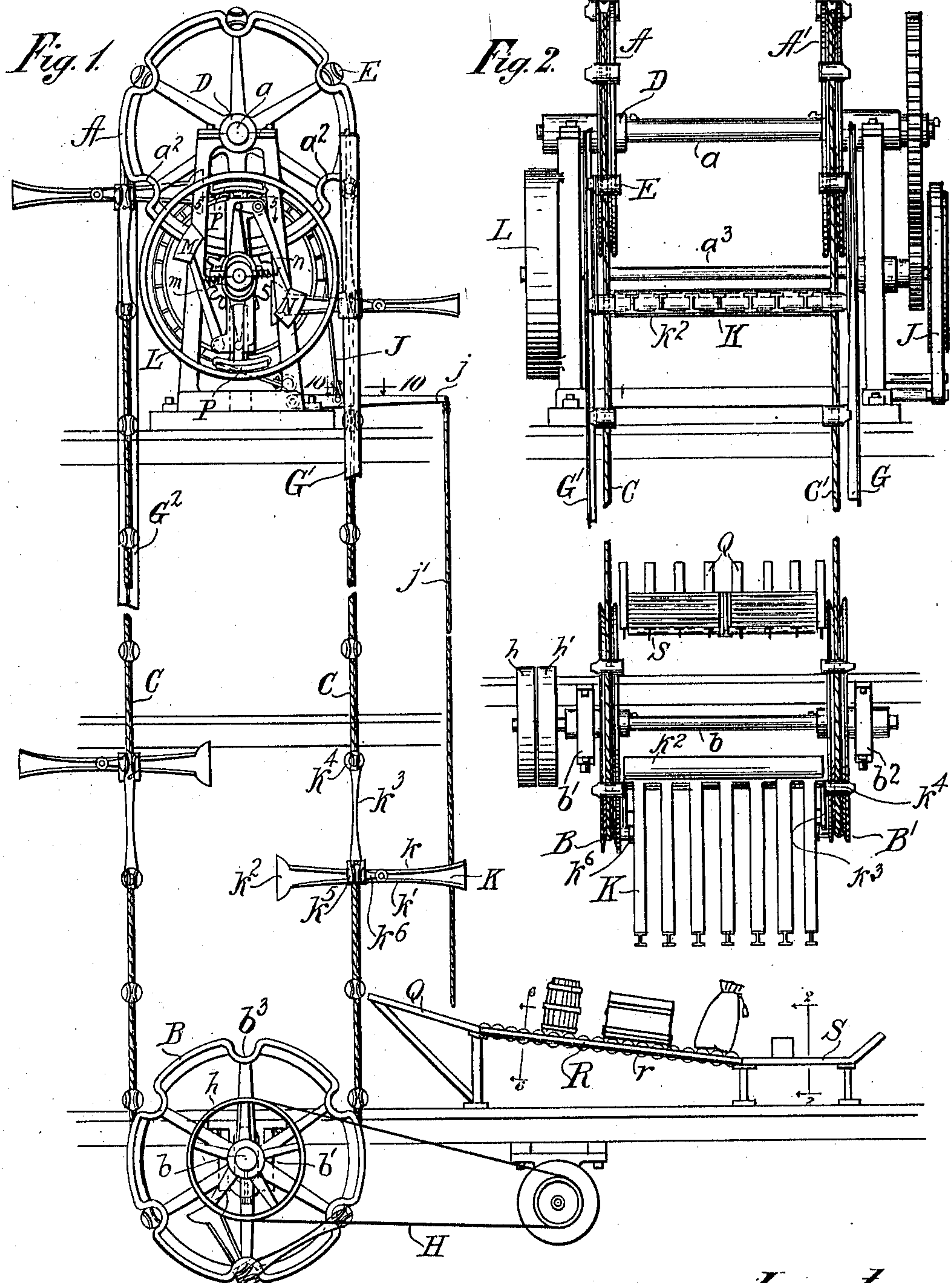


J. L. SAUTERS.
FREIGHT LOWERING AND HOISTING APPARATUS.
APPLICATION FILED MAR. 24, 1909.

982,881.

Patented Jan. 31, 1911.

2 SHEETS—SHEET 1.



Witnesses:
Geo. M. Mayer
R. C. Walinger.

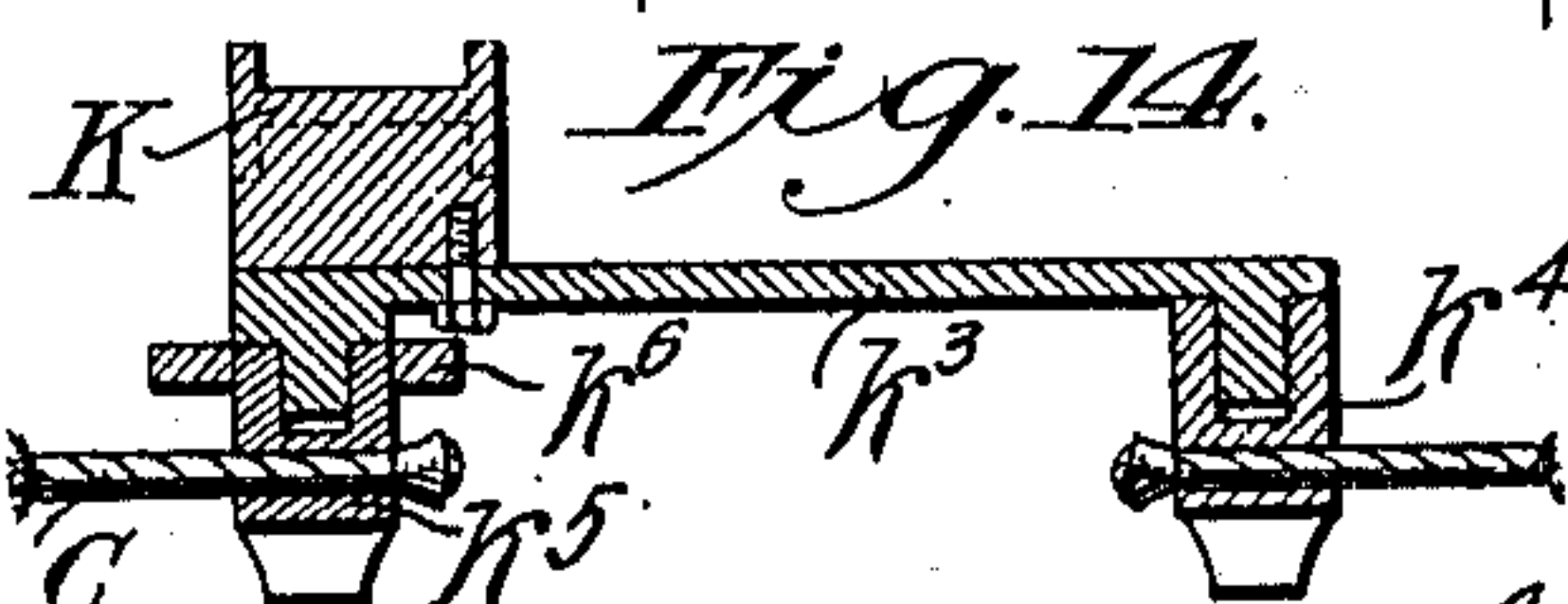
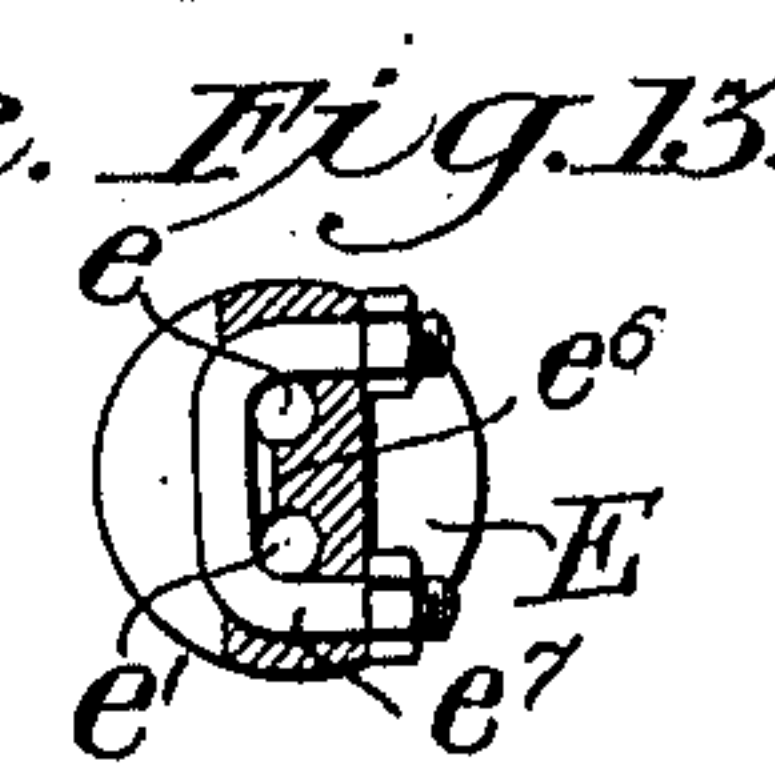
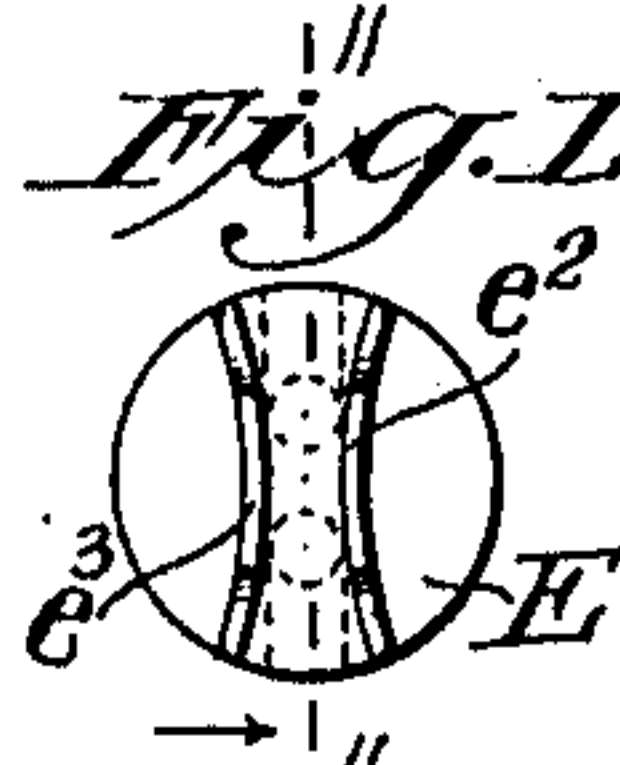
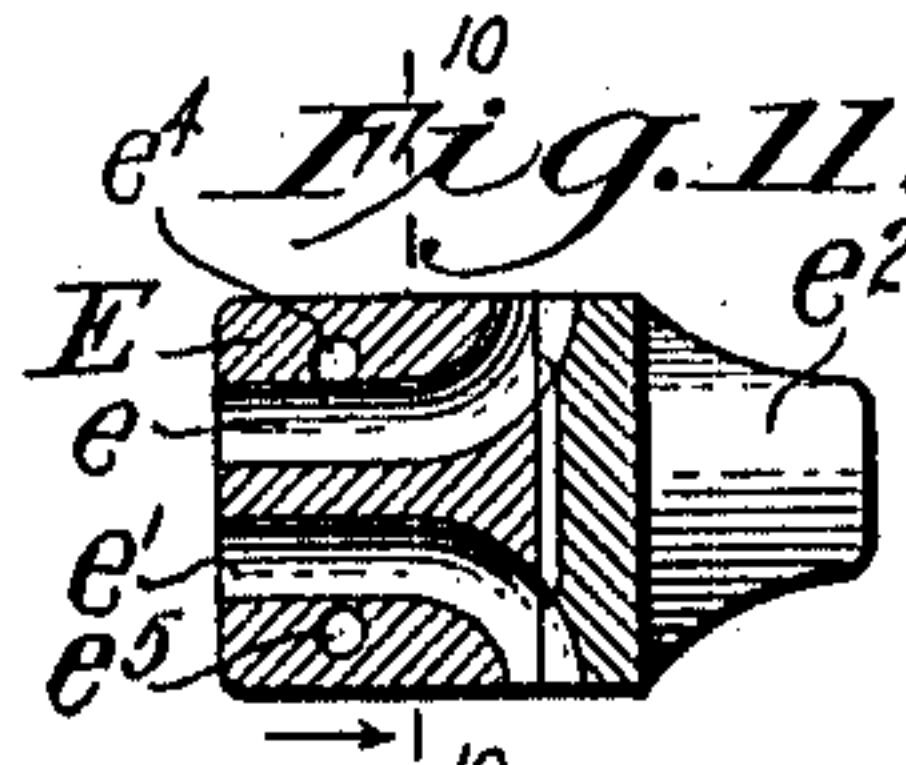
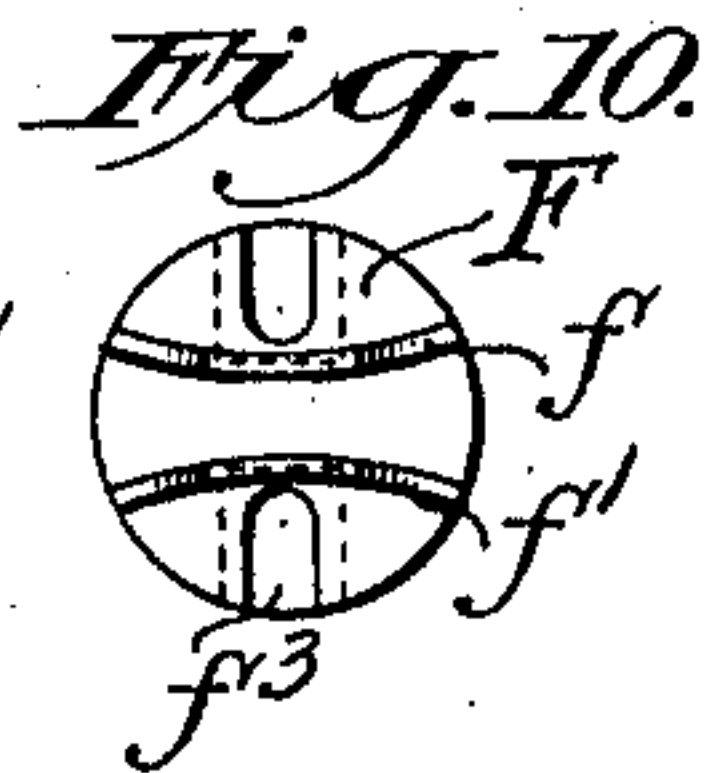
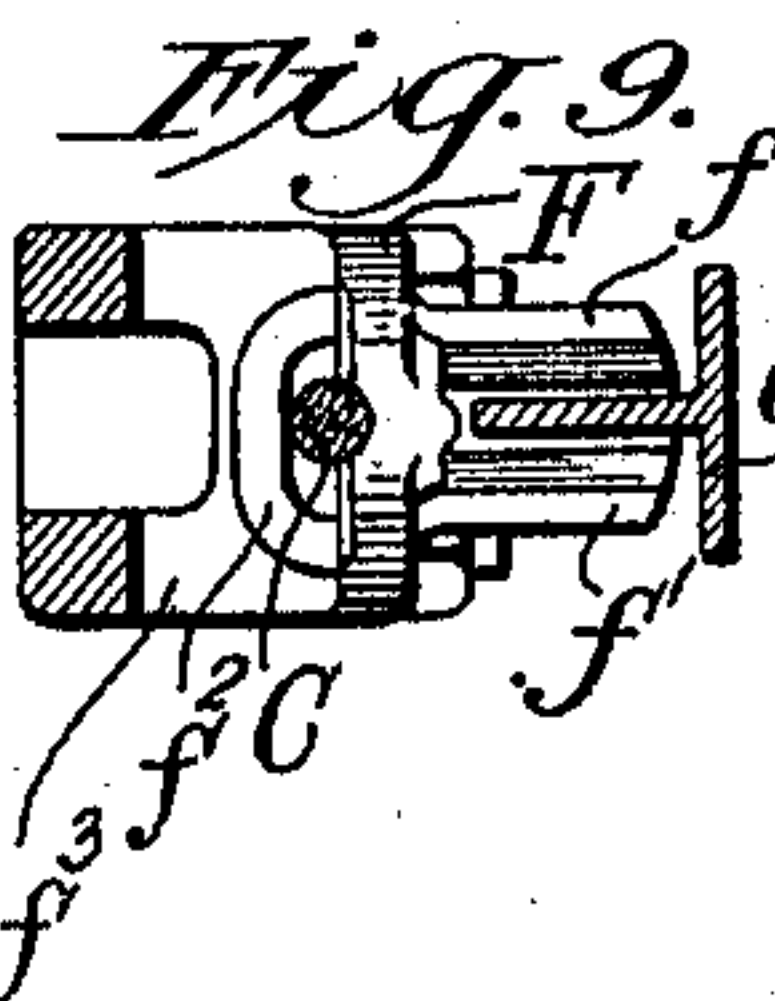
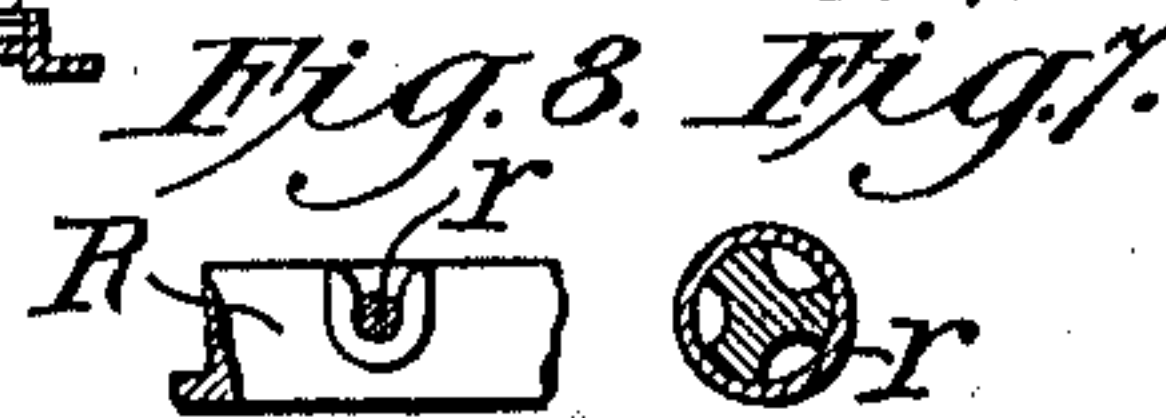
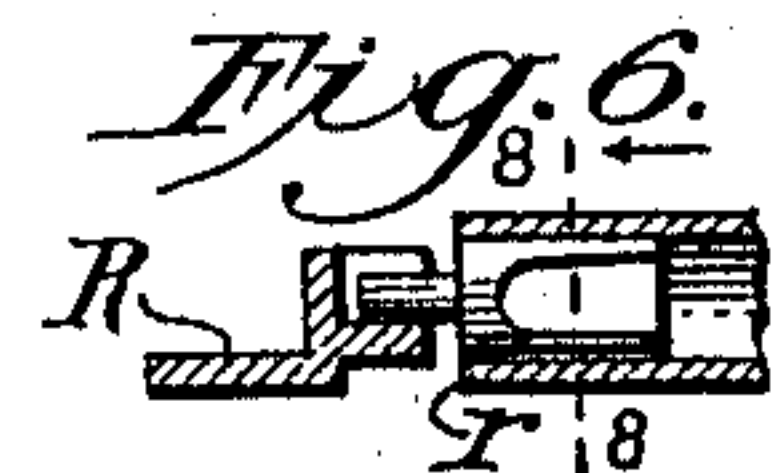
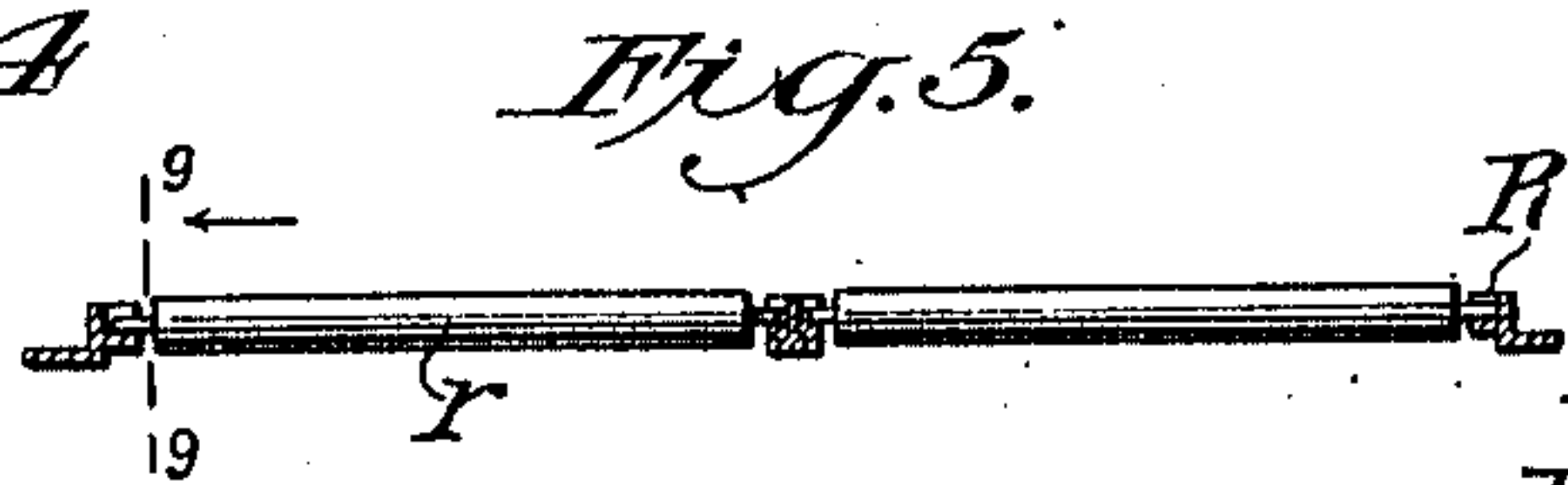
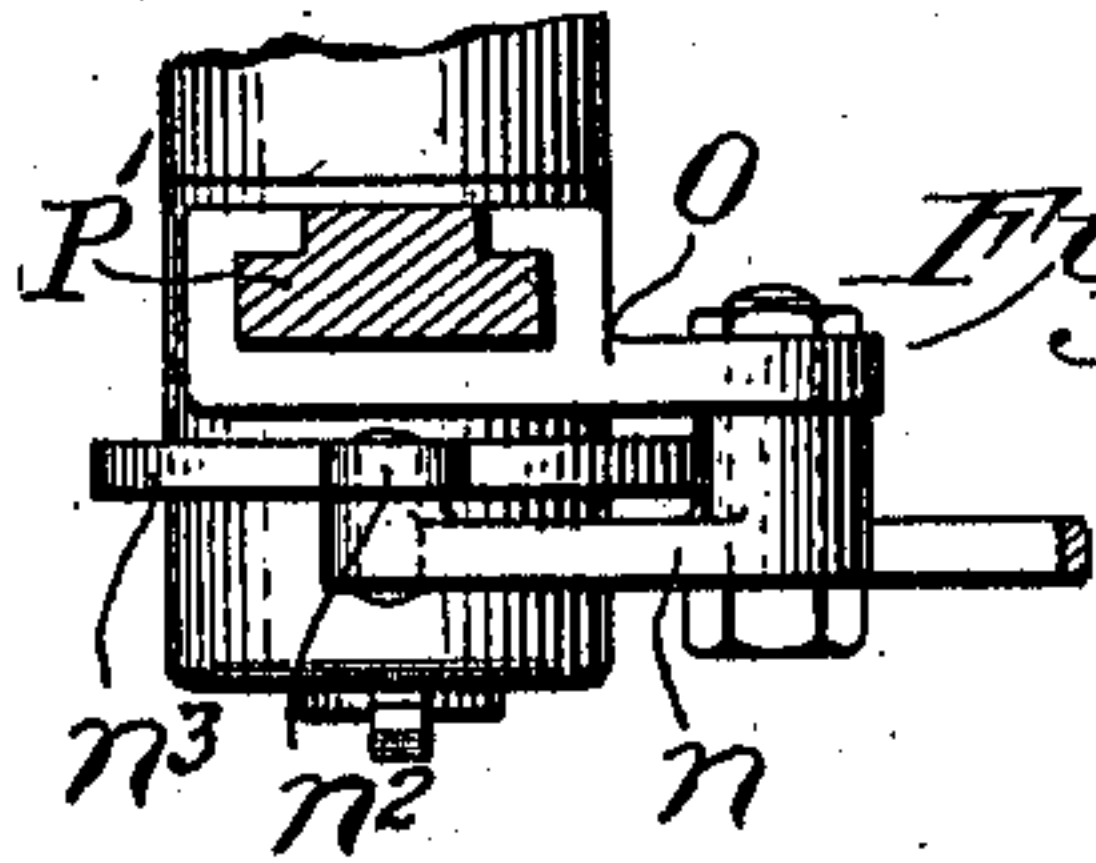
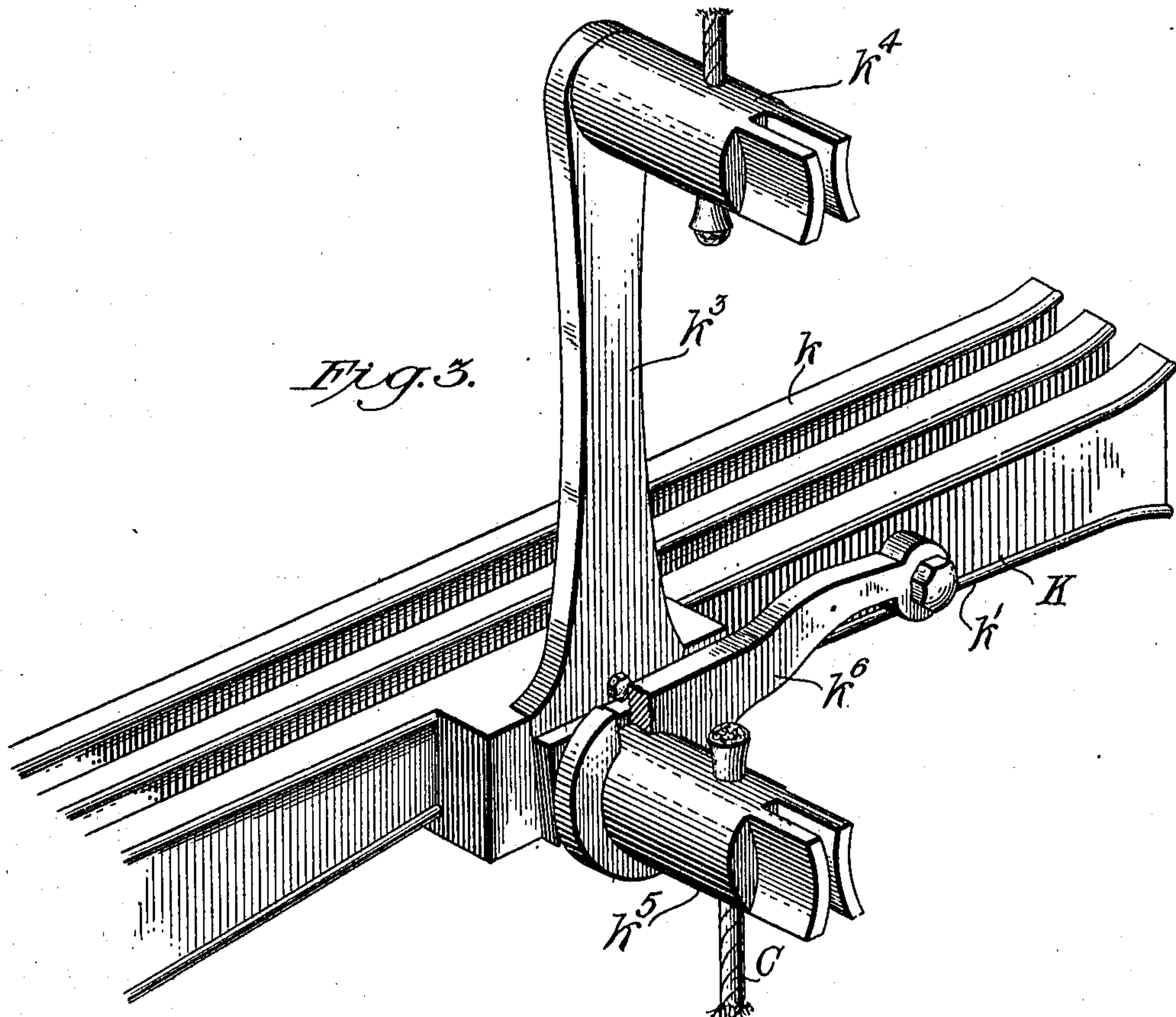
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2 SHEETS—SHEET 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOSEPH L. SAUTERS, OF CHICAGO, ILLINOIS.

FREIGHT LOWERING AND HOISTING APPARATUS.

982,881.

Specification of Letters Patent.

Patented Jan. 31, 1911.

Application filed March 24, 1909. Serial No. 485,423.

To all whom it may concern:

Be it known that I, JOSEPH L. SAUTERS, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Freight Lowering and Hoisting Apparatus, of which the following is a specification.

This invention relates to freight lowering and hoisting apparatus, and belongs more particularly with those associations of mechanical contrivances by which goods of any nature may be lowered from higher to lower floors of storage or warehouses, the machinery being operated usually by the weight of the goods, and the rapidity of the descent is controlled by a suitable governing device. Incidentally, the same machinery is adapted for the application of power whereby goods may be raised when desired.

The object of this invention is the production of apparatus of the character stated having special construction of the several parts, and a particular arrangement of those parts, enabling the whole to be more economically installed, and more conveniently operated, and in which the various parts are less subjected to excessive wear during use, than in any like machinery with which I am acquainted.

The construction and arrangement constituting this invention by which the above-mentioned object is accomplished, is illustrated in the accompanying drawings, of which—

Figure 1 represents a side view of all parts assembled. Fig. 2 is a front view. Fig. 3 is a perspective view of a portion of the carrier at one side, showing the cable clips, also the link and brace with which each side of the sets of carrier arms are provided. Fig. 4 is a horizontal sectional view of a portion of the clutch shown in Fig. 1, taken on the broken line 5—5 of Fig. 1. Fig. 5 is a cross-section of the receiving table showing the rollers, and taken on line 6—6 of Fig. 1. Fig. 6 is a fragmentary sectional view showing a portion of the end of one roller in section, and one side rail of the table also in section. The trunnion is shown in engagement with the side rail. Fig. 7 is a cross-section of the roller on broken line 8—8 of Fig. 6. Fig. 8 is a cross-section on line 9—9 of Fig. 5. Fig. 9 is a part longitudinal section of one of the cable clips, and a

horizontal cross-section of one of the vertical guide rails. Fig. 10 is a front view of one of the cable clips showing the curved lips. Fig. 11 is a section lengthwise of one of the cable clips constructed to be used to join the ends of the cable. Fig. 12 is a front view of the cable clip shown in Fig. 11. The broken line 11—11 of Fig. 12 is that upon which the section shown in Fig. 11 is taken. Fig. 13 is a cross-section on the broken line 10—10 of Fig. 11. Fig. 14 is a sectional view of the cable clips and link with which each side of the sets of carrier arms are provided. The section is taken lengthwise of the link.

Throughout the drawings and description the same characters are employed to refer to the same parts.

Considering the drawings, letters A and A', mark the upper grooved sheaves on shaft *a*. The lower grooved sheaves are designated by letters B, and B', and are borne by shaft *b*. The cables are marked C and C'. The bearings D support shaft *a*. The bearings *b*¹ and *b*² in which the shaft *b* is journaled are advantageously of the ordinary variety that may be adjusted up and down to take up the slack of the cables in the customary manner. The sheaves are provided with transverse grooves or sockets such as those marked *a*² for sheave A, and *b*³ for sheave B, in Fig. 1. In those sockets the rope clips E and F fit, and the sockets and clips become engaged and disengaged as the invention is operated, as will be readily understood. The clip E, as best shown in Fig. 12, is designed to join two ends of the cable instead of splicing those ends. Channels *e* and *e*' having curved portions are provided to receive the ends of the cable. The curved lips *e*² and *e*³ are upon the opposite end of the clip E from the mouths of the two channels. Boltholes *e*⁴ and *e*⁵, and the recess *e*⁶ permit the U-bolt *e*⁷ to be closed upon the cable ends in the channels *e* and *e*'. The cable clip F, illustrated most clearly in Figs. 10 and 11, is constructed with the curved lips *f* and *f*', the function of which is to engage the guide rail G' as shown. Each cable is provided with two adjacent guide rails, but one of which G is shown for the cable C', in Fig. 2, while both guide rails G' and G² are shown for the cable C in Fig. 1. All the guide rails have the same T-shaped cross-section shown in Fig. 10. In addition to the

curved lips f and f' , the clip F has the U-bolt f^2 and a recess f^3 , into which the bolt may be placed when it is desired to clamp the cable C and thus attach the clip. The clips are attached at intervals as shown in Figs. 1 and 2.

To drive this invention in case of necessity the belt H is used from any source of power. The common fixed and loose pulleys h' and h are shown in Figs. 1 and 2, and driving belt H may be shifted from one to the other to apply the power and to take it off.

To control the movement of the parts manually, for example, when weight is being lowered, a strap brake J is provided, and may be operated by means of lever j and drawrope j' .

The carrier arms K are arranged in sets separated one from another as shown in Fig. 2. The upper and lower surfaces k and k' of each arm is concave to more securely retain packages, boxes or barrels of goods placed thereon, and at the back is an extended and weighted end k^2 , the extensions of which prevent a box, for example, from being inadvertently pushed off backward. It will be observed in Fig. 2 that the end k^2 connects the inner ends of all the carrier arms K of each set, which have no other connection with each other. For that reason also the common end k^2 of the arms is extended and made particularly strong and heavy. Each of the links k^3 has two cable clips attached to it, marked k^4 and k^5 in Figs. 1 and 15. The ends of cable C are fastened in those clips as illustrated in Fig. 15. From the junction of the link a brace k^6 extends forwardly and is connected with the outside carrier arm of the set. In Fig. 14, the inner end of brace k^6 is shown in section at the end of link k^3 that is attached to the carrier arms K. It will be understood that the end of the brace k^6 is rigidly secured either to the end of the link or to the clip k^5 , which is firmly secured to the link. The purpose of the brace k^6 is to take part of the strain to which the junction of the link and carrier arms is subjected when the arms are loaded. Each set of carrier arms has two links and braces one on either side, as shown in Fig. 2. The cable clips k^4 and k^5 are the same in construction as those marked E and F, and have like curved lips to engage the vertical guide rails, and hold arms K level.

To guard against too rapid descent when heavily loaded, this invention includes a governor comprising an annular fixed ring L, and revolving weights M and N, at the free ends of bell-crank levers m and n . Fig. 3 best shows the parts of the governor mentioned, and Fig. 4 will aid the further explanation. To the longer arm of each bell-crank a spring is attached. The springs are

referred to by letters m' and n' . The shorter end of each bell-crank is attached pivotally to the end of an eyebar such as that marked n^2 , and the opposite or free end n^3 of the eyebar rests against the radially movable stem of shoe P, which slides in the guide O. The arrangement of those parts is likewise shown in Fig. 5. It will be readily understood, that an excess of speed throws the weights M and N from the shaft a^3 and causes them to exert a frictional pressure or contact of greater or less force corresponding to the speed. Whatever the weight carried, therefore, the speed of the descent cannot exceed a set rate for which the governor is adjusted.

On the lower floor of the warehouse, are placed the separated arms Q having inclined positions and so arranged that the descending carrier arms K will pass between them. It is believed to be clear that the package of goods borne by the descending carrier arms will be left upon the inclined fixed arms Q down which it will slip and travel the incline R having the rollers r , until the delivery table or platform S is reached.

It will be noted that the link k^3 , as illustrated in Figs. 1 and 2 is connected with the carrier arms at a distance from their ends, and that the openings between the carrier arms extend both forward and in rear of the position of the link. It is believed to be clear, therefore, that if a heavy body be placed between the links the pull upon the cables will be substantially vertical and the carrier arms and link will not be subjected to any considerable tilting effect. Furthermore, as the openings between the carrier arms extend well back of the link, opportunity is afforded for making the arms Q longer if desired thereby enabling a load of greater bulk to be caught by arms Q. It will be understood that the space between the cables is clear, and that the length and inclination of the receiving arms Q may be varied as conditions demand.

Upon the righthand side as illustrated in Fig. 1, the goods are lowered, and upon the lefthand side they may be raised upon the sets of carrier arms, power being obviously called for in the latter operation.

Having now described the construction of this invention and explained the mode of its operation, I claim—

1. In a freight lowering and hoisting apparatus, the combination with the cables, of carriers comprising sets of arms arranged parallel with each other and rigidly joined together at one and the same end, and links having their ends connected with the cables, the said links having ends joined to the sides of said sets of carrier arms and at a distance from the joined ends of the said arms.

2. In a freight lowering and hoisting apparatus, the combination with the cables, of carriers comprising sets of arms arranged

parallel with each other and rigidly joined
together, each of said arms being widest at
the ends and the upper and lower surfaces
thereof converging from the ends inwardly,
5 and links having braces extending at right
angles with the links and alongside of said
sets of arms and connected with said arms,
the said links projecting perpendicularly to

said arms, and both ends of the links being
connected with the cables.

10

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

JOSEPH L. SAUTERS.

Witnesses:

HARRY C. BROWN,
WILLIAM J. GIBBS.