

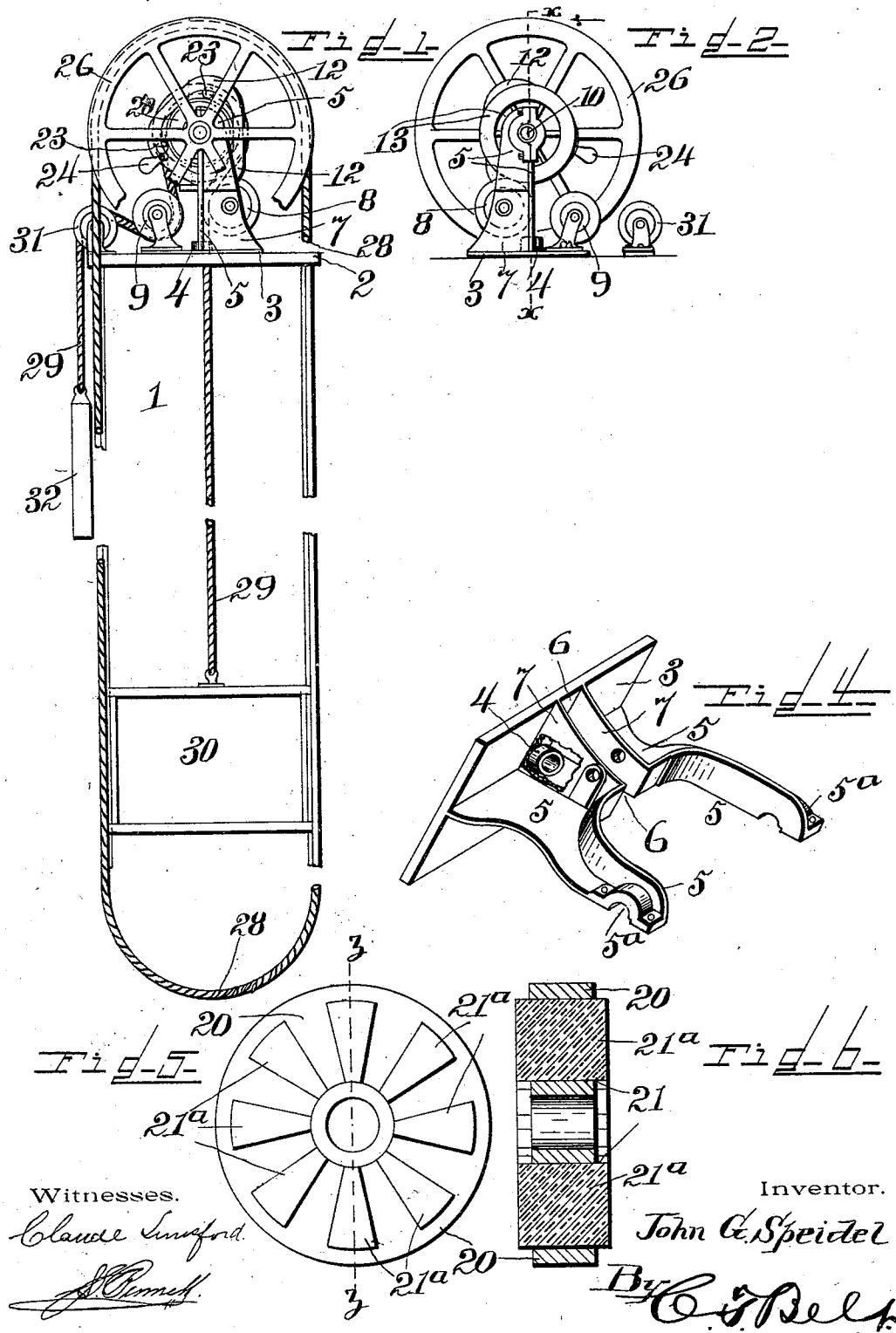
(No Model.)

4 Sheets—Sheet 1.

J. G. SPEIDEL.
ELEVATOR.

No. 551,796.

Patented Dec. 24, 1895.



Witnesses.

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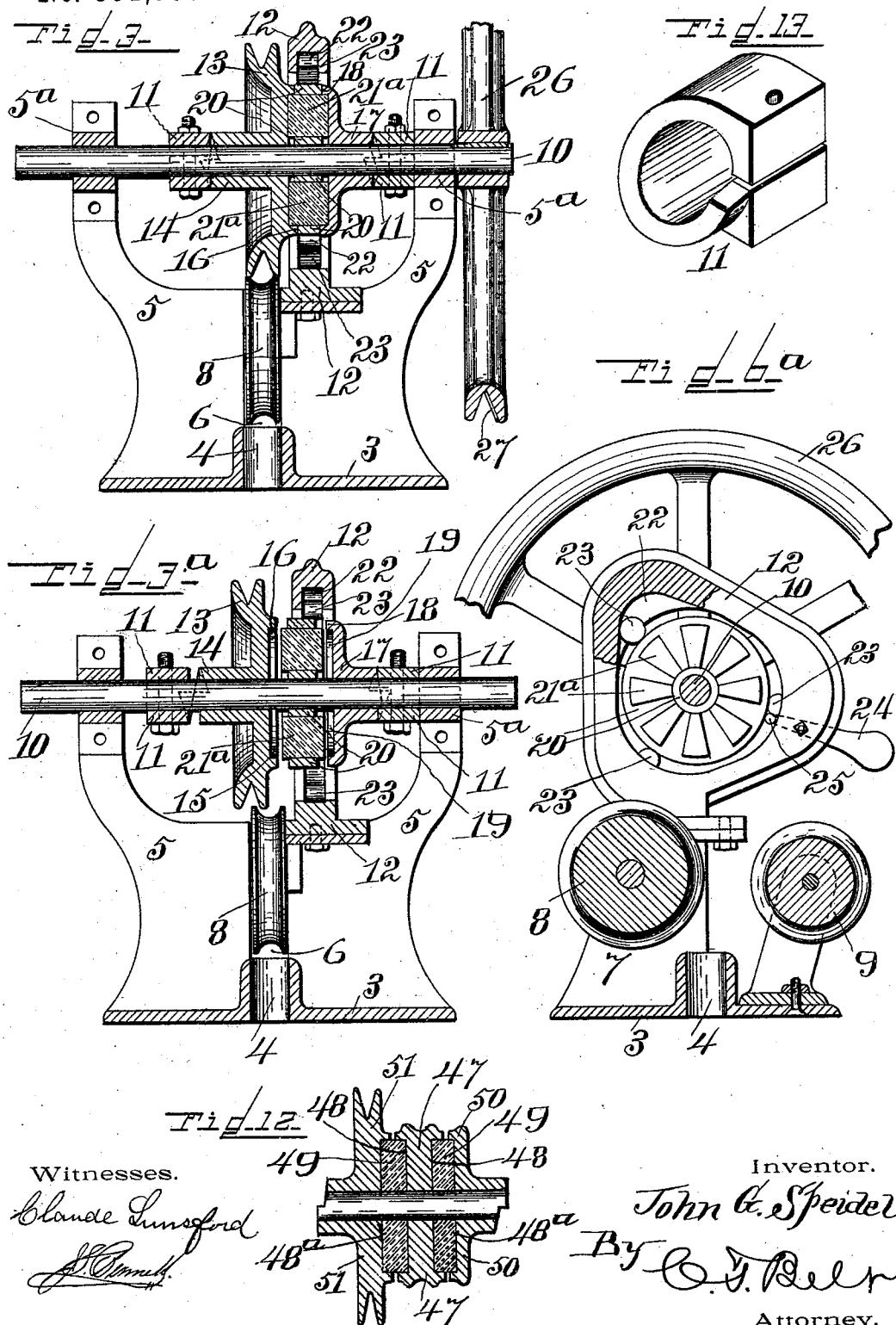
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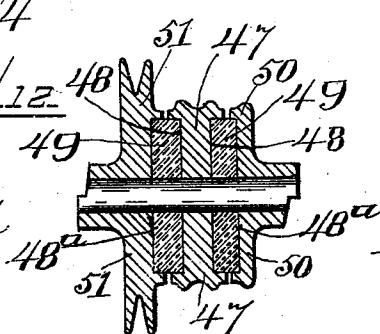
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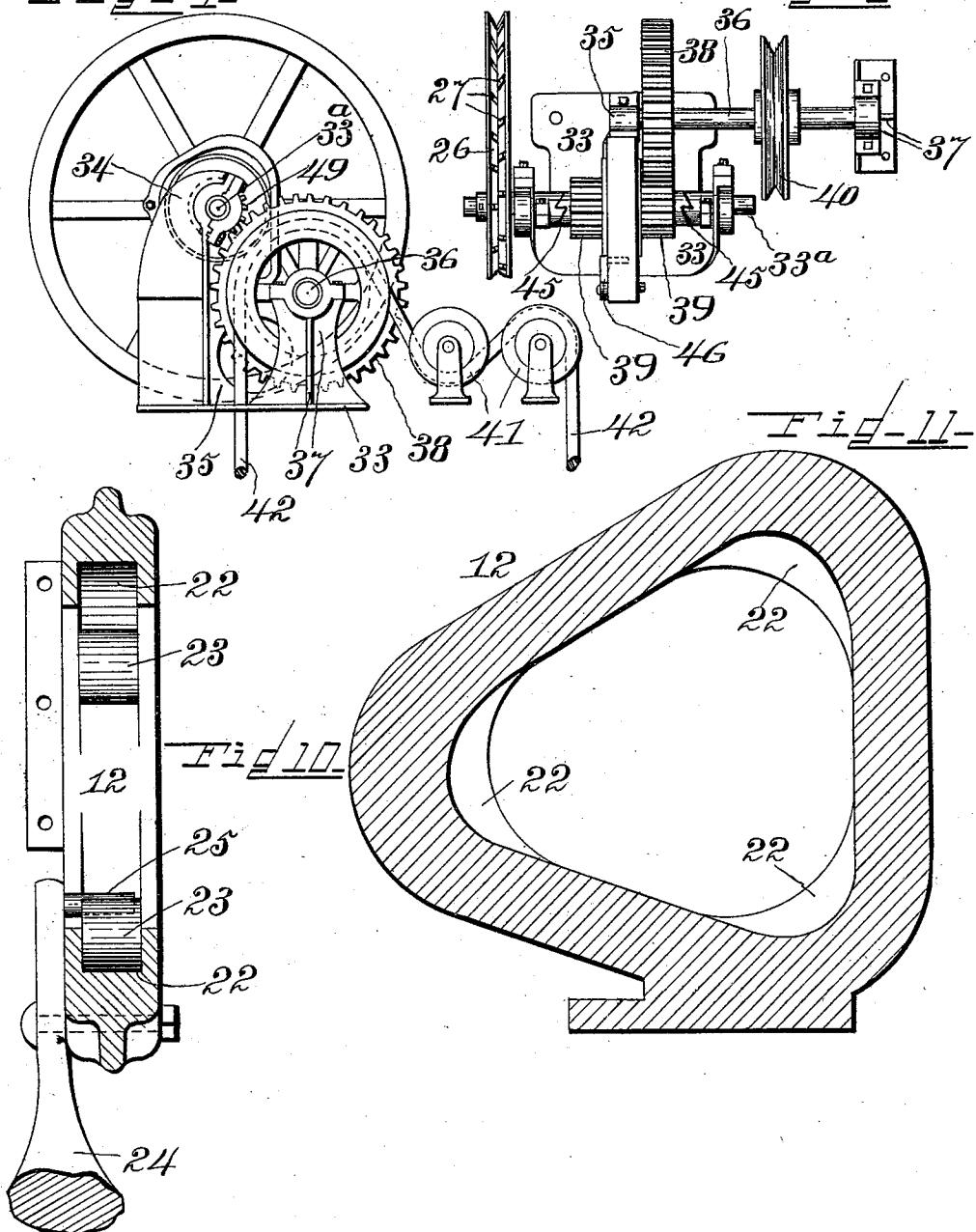
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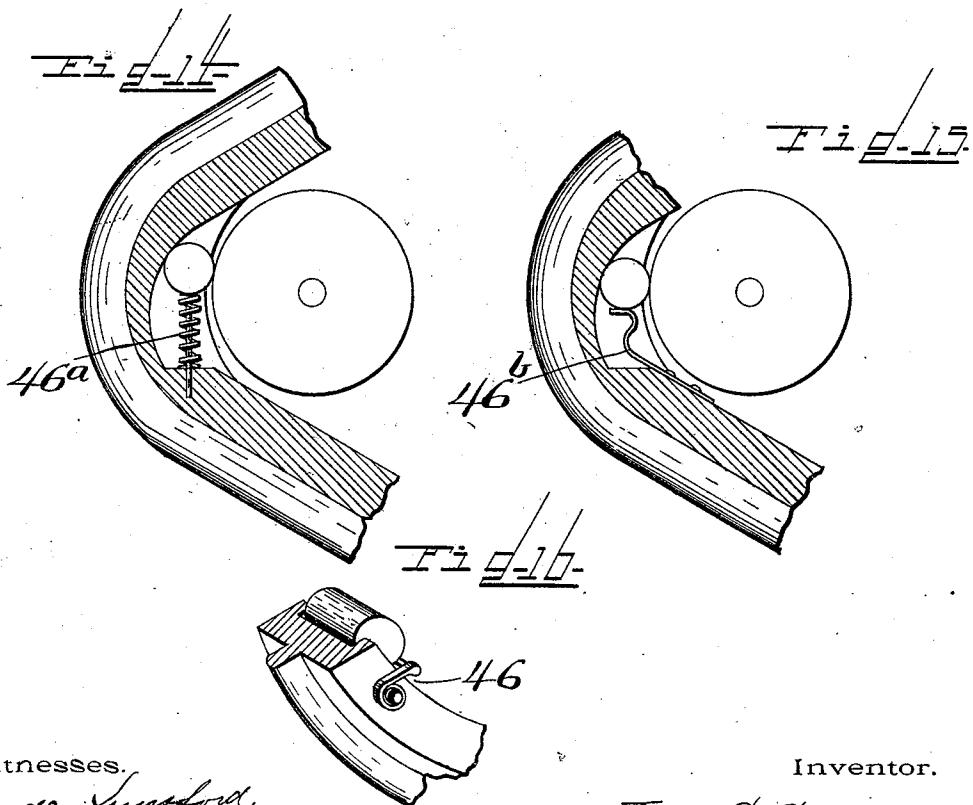
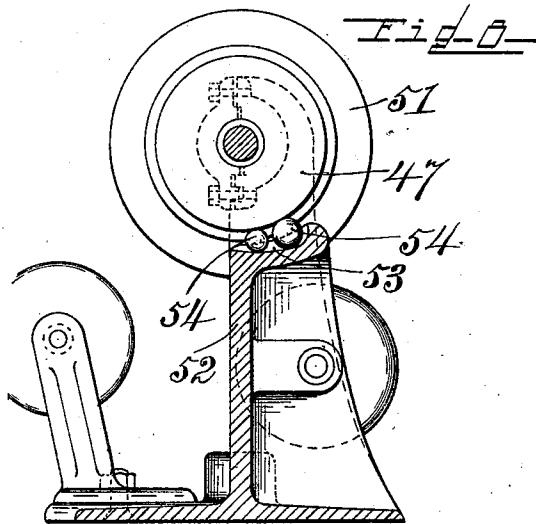
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4 Sheets—Sheet 4.

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UNITED STATES PATENT OFFICE.

JOHN G. SPEIDEL, OF READING, PENNSYLVANIA.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 551,796, dated December 24, 1895.

Application filed March 8, 1895. Serial No. 541,026. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. SPEIDEL, a citizen of the United States, residing at Reading, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Elevators, of which the following is a specification.

This invention relates to elevators, and particularly to hand-elevators or dumb-waiters, and its novelty, purpose, and effect will be fully understood from the following description and claims when taken in connection with the annexed drawings.

The object of the invention is to provide a simple and durable machine for operating hand-elevators or dumb-waiter cars.

A further object of the invention is to provide a machine for controlling hand-elevators or dumb-waiter cars and a ball or roller friction-coupling combined with a brake-disk, so that said car may be stopped in its travel positively and automatically, and without the least shock to the parts of the machine, as soon as the hand-rope is let go.

A further object of the invention is to provide a supporting main frame for the sheaves and for the brake mechanism of novel and peculiar construction, affording compactness of the working parts of the machine and ease in erection, requiring less space upon the cross-beam of the elevator-well and producing a much lighter machine than those now in use.

A further object of the invention is to provide a brake-frame of new and novel construction, to house the friction balls or rollers, and to warrant effective and positive action of said rollers between the said frame and the brake-disk.

A still further object of the invention is to provide one main frame to carry one fixed guide-sheave and one swivel guide-sheave for the lifting-rope, so that the said guide-sheaves can never be placed in a wrong position, saving much time in putting up the machine and great wear and tear on the draft-rope.

Other objects and advantages accruing from my improved construction and arrangement will be hereinafter revealed in the specification and pointed out in the appended claims.

In the accompanying drawings, forming a

part of this application, Figure 1 is a front view of my machine in position upon a small elevator or dumb-waiter, such as are in common use in dwellings. Fig. 2 is a rear view of my machine shown in Fig. 1. Fig. 3 is an enlarged longitudinal section of this machine on the line xx , Fig. 2. Fig. 3^a is a similar view with some of the parts upon the main shaft moved apart. Fig. 4 is a perspective view of the main frame of this machine. Fig. 5 is an enlarged side view of the brake-disk. Fig. 6 is a sectional view of Fig. 5 on the line zz . Fig. 6^a is a vertical transverse section of Fig. 6, lying between the sheave 13 and the brake-disk 20, looking toward the right. Fig. 7 is a rear view of a modified form of my machine of greater size and of such size and strength as to haul greater loads than that shown by Fig. 1. Fig. 8 is a sectional view of a further modified form of machine employing friction-balls. Fig. 9 is a top view of Fig. 7. Fig. 10 is a transverse sectional view of the brake-frame, taken through two of the inclined roller-pockets. Fig. 11 is a vertical section of the brake-frame through all the pockets. Fig. 12 is a sectional view of the form of brake-disk shown in Fig. 8. Fig. 13 is an enlarged perspective view of one of the split couplings. Figs. 14, 15, and 16 show modified forms of springs supporting one of the brake-rollers.

The same reference-numerals denote the same parts throughout the several figures of the drawings.

The elevator-well 1 has the usual top cross-beam 2, upon which is secured the main frame of my machine. This frame consists of a base 3, having a central flanged hole 4, from which extend upward and outwardly from each other the arms 5, the latter being formed in the same piece with the said base, with an opening 6 between them in the same vertical plane with the flanged hole 4, in which the guide-sheave is operated. Extending laterally from each of the arms, and formed in the same piece with the arms and the said base 3 and projecting upward at right angles from the latter, are the arm-wings 7 in which the guide-sheave 8 is journaled. The base 3 is also provided with a swivel guide-sheave 9, the pivot of which is in the same vertical plane with the hole 4 and the sheave 8. The object

of the guide-sheave 9 is to lead the hoisting-rope to the weight in such a way that in swiveling around its pivot the rope is always in a convenient position whether the weight 5 be on the rear, right or left hand side of the elevator-well. In the top of the arms 5 are formed the journal-bearings for the driving-shaft 10, the latter being provided with a split coupling member 11 near each of said journal-bearings 5^a. This shaft extends through the center of the brake-frame 12, (the latter being hereinafter more fully described,) and carries the sheave 13, on one side of the brake-frame 12, in the same vertical plane with the 10 hole 4 and sheave 8. The hub of the sheave 13 forms the coupling member 14, corresponding to one of the coupling members 11, and upon the inner face of the sheave 13 is a circular cavity 15 and a side bearing-flange 16. Opposite the sheave 13, upon the shaft 10, is mounted the other coupling member 17, having a flange 18 and a circular cavity 19, and between these said side bearing-flanges 16 and 18 is loosely mounted upon the shaft 25 10 the brake-disk 20, having apertures 21 which contain friction-plugs 21^a. These plugs project slightly upon each side of the brake-disk, the ends bearing in the cavities 15 and 19 and having the flanges 16 and 18 surrounding and also bearing upon the said plugs. This arrangement gives the coupling members 13 and 17 a double bearing upon the brake-disk and warrants improved results attainable thereby. The aforesaid parts 13, 30 17 and 20 are loosely mounted upon the shaft, and said parts are adjusted upon the said shaft relative to each other by means of the split coupling members 11.

The brake-disk 20 is surrounded by the 40 brake-frame 12, the latter being of triangular shape, and at each angle is formed an inclined pocket 22, in which is housed the frictional rollers 23, having the bearings upon the periphery of the drum or disk 20 and the incline of the pockets.

It will be observed that the brake-frame, although shown and described as triangular, may be of other angles or forms, in accordance with the number of pockets desired. 50 The brake-frame 12 is bolted to one of the arms 5, and has pivoted thereto a weighted lever 24, having a projection 25 reaching in under one of the rollers between the brake-frame and the said brake-disk, with the object of keeping the roller (which by its own weight would fall away from the pocket incline) always in contact with the brake-disk and the said pocket incline.

In the operation of hoisting with this machine the brake-disk and the clutch members with side bearing-flanges are revolved with the rollers offering no resistance to its motion, while during the operation of lowering the brake-disk is held fast by means of 65 the locking-rollers and the friction between the faces of the coupling member 17 and sheave 13, which has to be overcome by the

power applied to the hand-rope. The hand-rope wheel 26 is keyed upon the shaft 10, and the inner face of its flanges, which diverge 70 from each other and form a V-shaped seat, have ribs 27 not opposite each other, but at intervals, so that the ribs of one flange will come opposite and midway the space between the ribs of the other flange. This causes an 75 interlocking grip between said wheel and the hand-rope 28, so that there is no possibility of the hand-rope slipping. The lift-rope 29 is attached to the car 30, from whence it extends upward through an aperture in the 80 beam 2, through the hole 4, between the sheaves 8 and 13, over the latter, between the sheaves 13 and 9, under the latter, and over the sheave 31 to the weight 32.

It will be understood that the aforesaid 85 brake-frame, brake-disk, rollers, and weighted lever constitute the brake mechanism.

Referring to the modified form of my machine shown in Figs. 7 and 9, the base 33 is of approximately rectangular shape, and the 90 journal-bearing arms 34 are formed in the same piece with it and carry the driving-shaft. Projecting upwardly and centrally from the base 33 and laterally from the said arms is the journal-bearing wing 35, in which 95 is journaled one end of a supplemental shaft 36, having its other end in an outer bearing-post 37, and carrying a gear-wheel 38, which meshes with one of the pinions 39 upon the driving-shaft. The supplemental shaft 36 100 also carries the main sheave or drum 40 of this machine, and one or more sheaves 41 may be employed to carry and guide the lift-rope 42 from the car to the weight, as clearly shown in the drawings.

The brake mechanism is identical with the brake mechanism shown in the first-described machine, and is operated in the same way; but the coupling members 45 are formed upon the ends of the pinions 39. Two pinions 39 110 are shown, since it may be desirable to place the post 37 (shown in Fig. 9) upon the opposite side of the machine and turn the shaft 36 end for end, and fix the hand-rope wheel on the other end of its shaft 33^a, thereby making 115 the machine right or left handed, and instead of the weighted lever a spring 46 is employed. (See Fig. 16.) Further modified forms of this spring are denoted by numerals 46^a and 46^b in Figs. 14 and 15.

This machine is made with its parts in a very compact form, and possesses much greater strength and power than the first-mentioned machine, and is intended to be used on large hand-elevators; but since it employs the same brake mechanism it can be operated quite as easily and accurately as the small machine, always holding the load automatically.

Referring to the modification shown in Figs. 130 8 and 12, each side face of the brake-disk 47 has a circular cavity 48, in which is located a friction-gasket 49, projecting slightly beyond the disk-faces, such projecting portion

engaging like cavities 48^a in the coupling members 50 and 51. The main frame 52 has a pocket 53, carrying friction-balls 54.

The operation of this class of machinery is so well known that a detailed description thereof will not be here given. It will be observed, however, that the parts carried by the main shaft of each of the machines can be readily adjusted or removed, saving much time and labor, while the frictional bearings of the brake-disk and flanges can be very easily and conveniently adjusted, while the whole machine can be put together and taken apart with great convenience by means of my improved construction and arrangement between the said parts.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A brake attachment for hand elevators, consisting of the brake disk, the brake frame having inclined pockets, the rollers housed in said pockets between the said brake disk and frame, the weighted lever pivoted to the said frame and having a projection adapted to engage the under side of one of the said rollers, as set forth.

2. The brake-disk having friction-plugs and the coupling-members adapted to engage the side faces of said plugs and having circular flanges adapted to bear on the peripheral faces of said plugs, combined with the brake-frame surrounding said disk and having a series of pockets, and the rollers housed in the pockets and adapted to engage the periphery of said disk, substantially as described.

3. The combination of the brake disk having friction-plugs, with the coupling-member adapted to engage the side faces of said plugs and having a flange adapted to bear on the peripheral faces of said plugs, substantially as described.

4. The combination of the brake disk having frictional bearings projecting from each side face, with the coupling members engaging said bearings, the brake frame having pockets, and the rollers contained in the pockets and engaging the periphery of the disk, as set forth.

5. The combination of a suitably journaled shaft and the brake mechanism through which said shaft extends, with the coupling member 14 carrying a sheave, the coupling member 17, the split coupling members adjustably secured upon the shaft to connect the

sheave and member 17 with the shaft and to regulate the frictional bearing between the brake mechanism and the said sheave and member 17, as set forth.

6. In a dumb waiter, the combination of the brake frame, the weighted lever pivoted to the said frame and having a portion projecting into the latter, the rollers, the brake disk, and the sheave 13, having its hub formed into one coupling member, with the main shaft having the other coupling member adjustably secured thereon, as set forth.

7. In a dumb waiter, the combination with the car, the draft rope and the hand rope, of the main frame having journal bearing arms branched from the base of the frame with a space between them, the sheave journaled in said space, the shaft journaled in said arms and carrying a coupling sheave, and the hand rope wheel, and the brake mechanism, substantially as set forth.

8. The combination of the main frame provided with a flanged hole and having journal bearing arms branched from its base with a space between them, a shaft journaled in said arms and a sheave on said shaft, the arm wings projecting upward at right angles to the base, the sheave 8 journaled in the arm wings, and the swivel sheave pivoted upon said base in the same plane with the said hole and the sheave 8, and a draft rope passing through said hole and around said sheaves, as set forth.

9. The combination of the main frame provided with a flanged hole and having journal bearing arms branched from its base with a space between them, a shaft journaled in said arms and a sheave on said shaft, the arm wings formed integral with the base and the said journal arms, the sheave 8 journaled in the arm wings and revolving in the said space, the swivel sheave pivoted upon said base in the same plane with the said hole and the sheave 8, a draft rope passing through said hole and around said sheaves, and the brake frame secured upon the main frame between the said journal arms, the brake disk upon the said shaft, and the rollers located between the brake frame and the disk, as set forth.

In witness whereof I hereunto set my hand in the presence of two witnesses.

JOHN G. SPEIDEL.

Witnesses:

JAMES H. SIDEL,
JAMES B. HARPER.