No. 862,639. PATENTED AUG. 6, 1907.

A. JEFFERIS.

LAZY TONGS ELEVATOR.

APPLICATION FILED OCT. 18, 1905.

2 SHEETS—SHEET 1.

Fig. I.

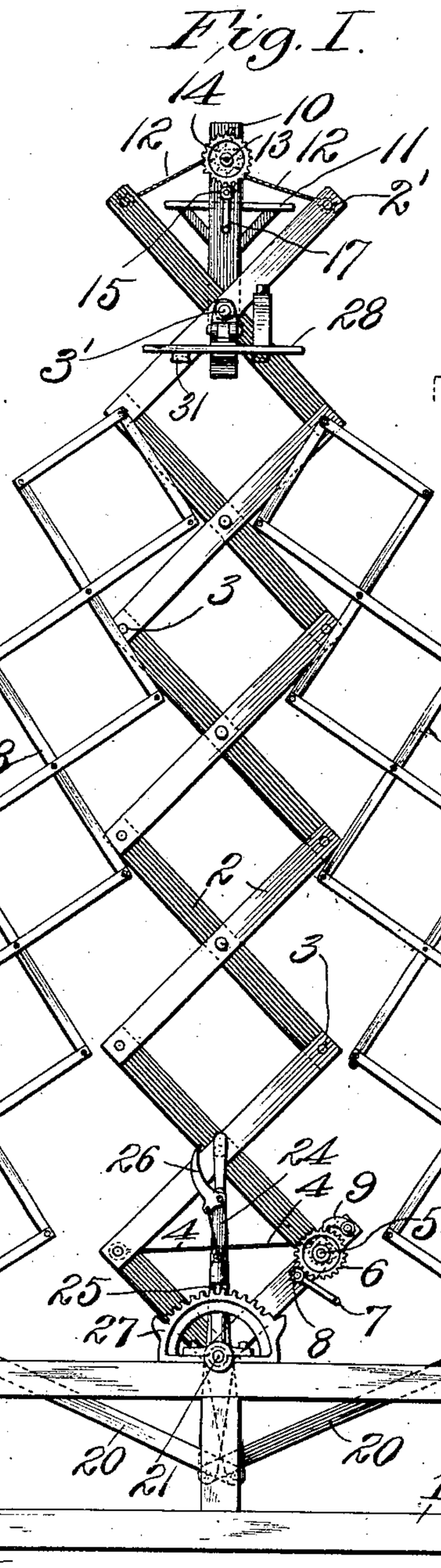
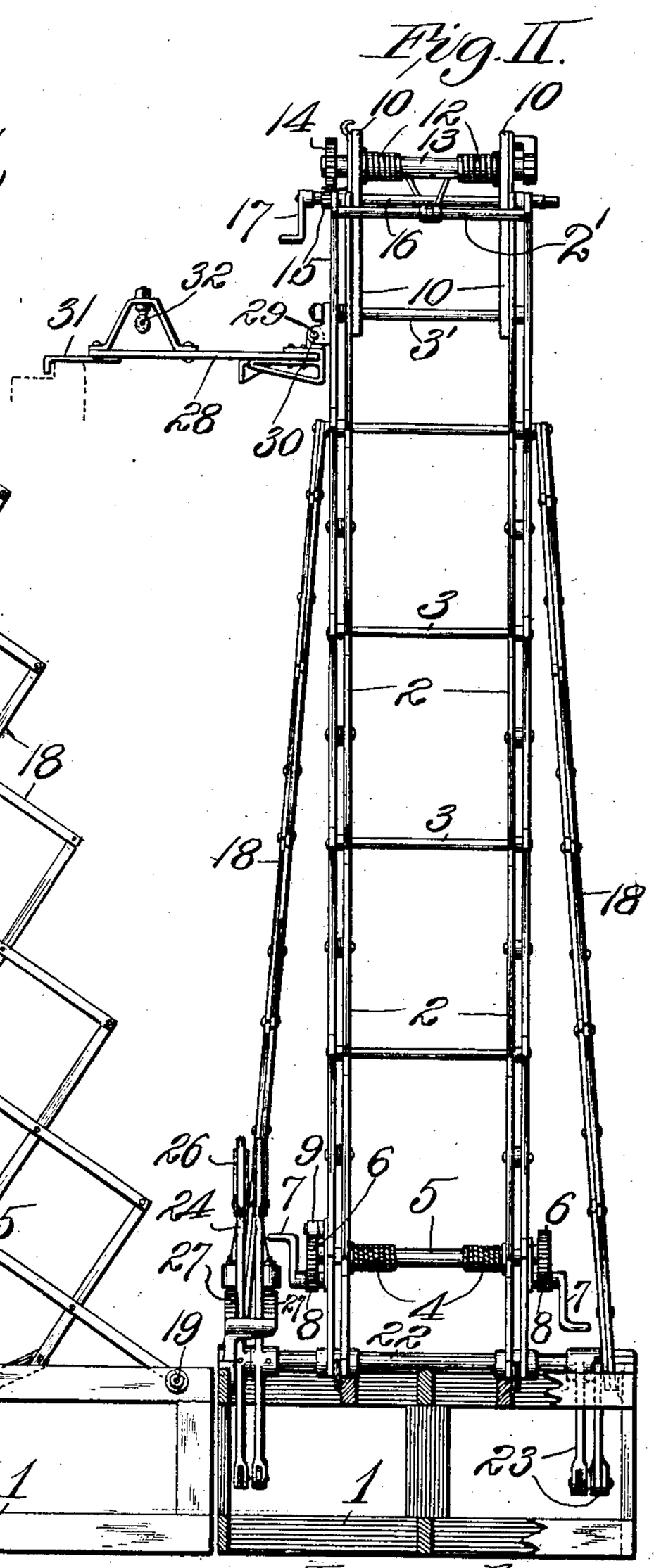


Fig. II.



Attest:
Wm. A. Scott.
E. K. Wright

Inventor:
A. Jefferis,
by Wright Bros
Attys.

No. 862,639. PATENTED AUG. 6, 1907.

A. JEFFERIS.

LAZY TONGS ELEVATOR.

APPLICATION FILED OCT. 18, 1905.

2 SHEETS—SHEET 2.

Fig. I.

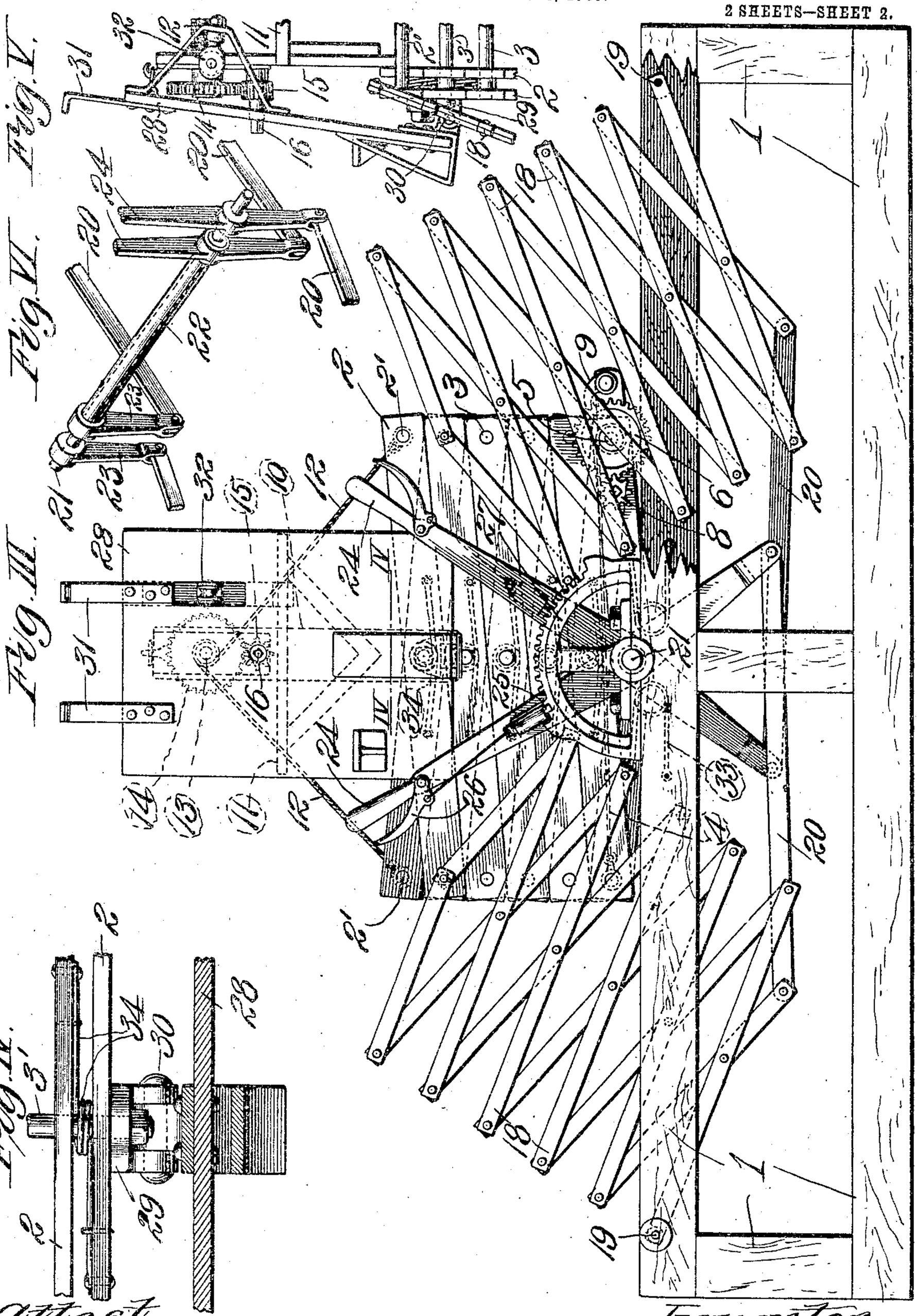


Fig. II.

Fig. III.

Fig. IV.

Attest

Wm. H. Scott.

E. L. Knight

Inventor.

A. Jefferis,

by Wright Bro

Attys.

UNITED STATES PATENT OFFICE.

AMBROSE JEFFERIS, OF EAST ST. LOUIS, ILLINOIS

LAZY-TONGS ELEVATOR.

No. 862,639. Specification of Letters Patent. Patented Aug. 6, 1907.

Application filed October 18, 1905. Serial No. 283,345.

To all whom it may concern:

Be it known that I, AMBROSE JEFFERIS, a citizen of the United States, residing in East St. Louis, in the county of St. Clair and State of Illinois, have invented certain new and useful Improvements in Lazy-Tongs Elevators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an elevator constructed upon the lazy-tongs principle and of such nature that it may be used as a ladder for hoisting men or material of any kind; also as a fire escape, a derrick or for utility as a hoisting or lowering apparatus of any nature to which the construction may be applicable.

Figure I is a side elevation of my elevator in partially raised condition. Fig. II is a front or rear elevation of my elevator in the position seen in Fig. I. Fig. III is an enlarged side elevation of the elevator in collapsed or lowered condition. Fig. IV is an enlarged horizontal section taken on line IV—IV, Fig. III. Fig. V is a front or rear elevation of the upper portion of the elevator in the condition seen in Fig. III. Fig. VI is a perspective view of the rock shafts by which the main section of the elevator is supported and the means by which the guy sections of the elevator are held in set positions.

1 designates the base frame of my elevator which may be of any desirable construction and may be mounted in a stationary position or supported upon a carriage to provide for portability of the elevator.

2 designates the main lazy-tongs sections which consist of a plurality of levers of any desirable number and size pivoted together in the manner common to the well known lazy-tongs. The lower levers of the main sections 2 are rockingly fitted to a support to be hereinafter named in order that said levers may move to and fro when the sections are extended or folded to provide for the upward movement of the elevator for the folding thereof. The main sections are united to each other by rungs or connecting rods 3 loosely fitted in the mating ends of the levers throughout the sections. One of the lower levers of each main section has connected to it a pull rope 4, and mounted in the opposite lever of each main section is a winch shaft 5 around which the pull ropes 4 corresponding to the two main sections are wound in order that when said winch shaft is rotated the pull ropes may be wrapped around the winch shaft to draw the lower main section levers toward each other for the purpose of elongating the main sections and raising the upper end of the sections to any desired elevation limited only by the number of and lengths of the levers present in said sections. The winch shaft has fixed to it spur wheels 6 to which rotation is imparted by cranks 7 associated with pinions 8, the latter of which mesh with the spur wheels 6. Retrograde rotation of the spur wheels, and consequently of the winch shaft, is prevented by a dog 9.

10 designates a pair of uprights loosely fitted to one of the upper rungs connecting the main sections of the elevator and 11 is a platform supported by said uprights on which a person may stand or sit or any other object to be elevated may be placed.

12 are pull ropes which are connected to the topmost levers of the main sections 2 preferably by securing said ropes to rods 2′ joining the topmost levers. One of these pull ropes is wound in one direction and the other in a reverse direction around a winch shaft 13 journaled in the uprights 10, whereby, upon the rotation of said winch shaft, the topmost main section levers may be drawn toward each other for the purpose of elongating the main sections of the elevator. The winch shaft 13 has fixed to it a spur wheel 14, and arranged in mesh with said spur wheel is a pinion 15 carried by a shaft 16 journaled in the upright 10. The shaft 16 is adapted to receive a crank handle 17 by which said rod may be turned to impart rotation to the winch shaft 13 for the purpose of exerting the desired pull upon the pull ropes 12.

18 designates guys of lazy-tongs construction, there being two of said guys for each of the main sections 2 of the elevator to stay said main sections from toppling movement. The uppermost levers of the guys 18 are pivotally connected to levers of the main sections of the elevator adjacent to the upper ends of said sections for the purpose of providing for corresponding movement of the main sections and guys. One of the lower levers of each guy 18 is pivoted at 19 to the base frame 1, see Figs. I and III, while the lever mating with each particular lever mentioned has connected to it a link 20. The links 20 are united to actuating mechanism to be presently described for the purpose, not only for elongating the lazy-tongs guys 18, but for holding them in their elongated conditions.

21 designates a rotatable shaft journaled in suitable bearing boxes on the base frame 1 and 22 is a rotatable hollow shaft loosely fitted to the shaft 21 to turn thereon. These shafts serve as supports for the main elevator sections 2 which are loosely supported thereon, being preferably fitted to the hollow shaft 22. The shaft 21 has fixed to it a crank arm 23 and a lever 24 to which the links 20 connected to one of the guys 18 are pivoted and the shaft 22 has fixed to it a crank arm 23 and a lever 24 to which the links 20 connected to the other guy 18 are pivoted. By this means either of the guys may be acted upon to elongate it independent of the other guy by the operator grasping the proper lever and imparting movement thereto for the purpose of

moving the links 20 corresponding to the guy to be elongated. Each of the levers 24 is provided with a pawl 25 and a grip lever 26 for actuating said pawl.

27 are rack segments with which the pawls of the lever 24 are adapted to engage for the purpose of holding the levers from movement when the guys have been elongated to the desired extent in correspondence to the elongation of the main elevator sections 2, thereby providing for the locking of the guys in their set positions.

28 designates a swinging platform that is supported by one of the main elevator sections 2 and is adapted to be placed in horizontal position, as seen in Fig. II, to rest upon a window sill or any other desirable support at the location to which said platform is raised when the elevator is in its up-lifted condition for service. The platform 28 is connected to the rung 3′ uniting the main sections 2 by a swing bracket 29 loosely fitted to said rung and pivoted at 30 to the platform. By this arrangement the platform 28 may be oscillated to bring it into a horizontal position so that it will rest upon a window sill or other support and that the said platform may also be elevated into a folded condition against the side of the main sections of the elevator when not in use. At the free end of the platform are arms 31 that are adapted to engage the window sill or other support on which the platform may depend for its support in addition to its connection to the elevator. 32 is a pulley carried by an iron bracket supported on the platform 28 which is provided with a slot (see 32 in Fig. III) through which the rope is passed for the purpose of hoisting or lowering any object that may be attached to the rope.

For the purpose of facilitating the upward movement of the main elevator sections 2 I make use of springs that will assist in the actuation of the levers of said sections. 33 are U-shaped springs having coils intermediate of their ends and each having an arm secured to one of the base frame members and an arm secured to one of the levers at the lower end of each elevator main section.

34 is an L spring having its coil surrounding the rung 3′ of the main elevator sections and having arms that are attached to the adjacent levers of the main sections. As seen most clearly in Fig. IV, similar springs are mounted upon each of the pivots holding the several sections. The springs 33 and 34 are constantly under tension and when the elevator is to be raised the springs act against the various levers of the main sections, thereby assisting in elongating said sections.

The operation of the elevator is now evident. The article to be hoisted is placed upon platform 11 in its lower position and pawls 25 disengaged from the segmental rack 27, to permit guys 18 to be drawn out as the platform moves upward. The crank handles 7 on either side of the machine are then manned and the rope 4 caused to wind upon spindle 5 by means of winch gears 6 and 8. As the ends of crossing levers are thus drawn together, the platform is elevated as already pointed out until it reaches its upper position when by manipulation of levers 24,—the lazy-tongs guys 18 are drawn taut and held so by the release of pawls 25. Side platform 28 may now be dropped and the load removed. Should it be desired to make use of pulley 32 for ordinary hoisting purposes, it would be of course necessary to raise the side platform to a point above where it is desired to deposit goods in which case projecting seats may be provided for arms 31 or platform 28 may be used as the jib of a crane. As is evident from Figs. I and II of the drawings, lower crank drive 7 and upper crank drive 17 may be used in conjunction so as to mutually reinforce one another.

I claim as my invention:

1. In an elevator having sections of lazy-tongs form, the combination of a main rectangular base, a pair of main central sections of lazy-tongs form carried thereon, a guy of lazy-tongs form mounted at each corner of the rectangular frame and attached at its outer end to the main central sections, and means for actuating said guy sections independently of said central sections.

2. In an elevator of the character described, the combination of a pair of main sections of lazy-tongs form, means for elongating said sections, guys connected to said sections, links connected to said guys, and levers having connection with said links, by means of which said guys may be elongated and contracted substantially as set forth.

3. In an elevator of the character described, the combination of a pair of main sections of lazy-tongs form, means for elongating said sections, guys connected to said sections, links connected to said guys, levers having connection with said links, and racks for holding said levers from movement, substantially as set forth.

AMBROSE JEFFERIS.

In presence of—
BLANCHE HOGAN,
WM. H. SCOTT.