

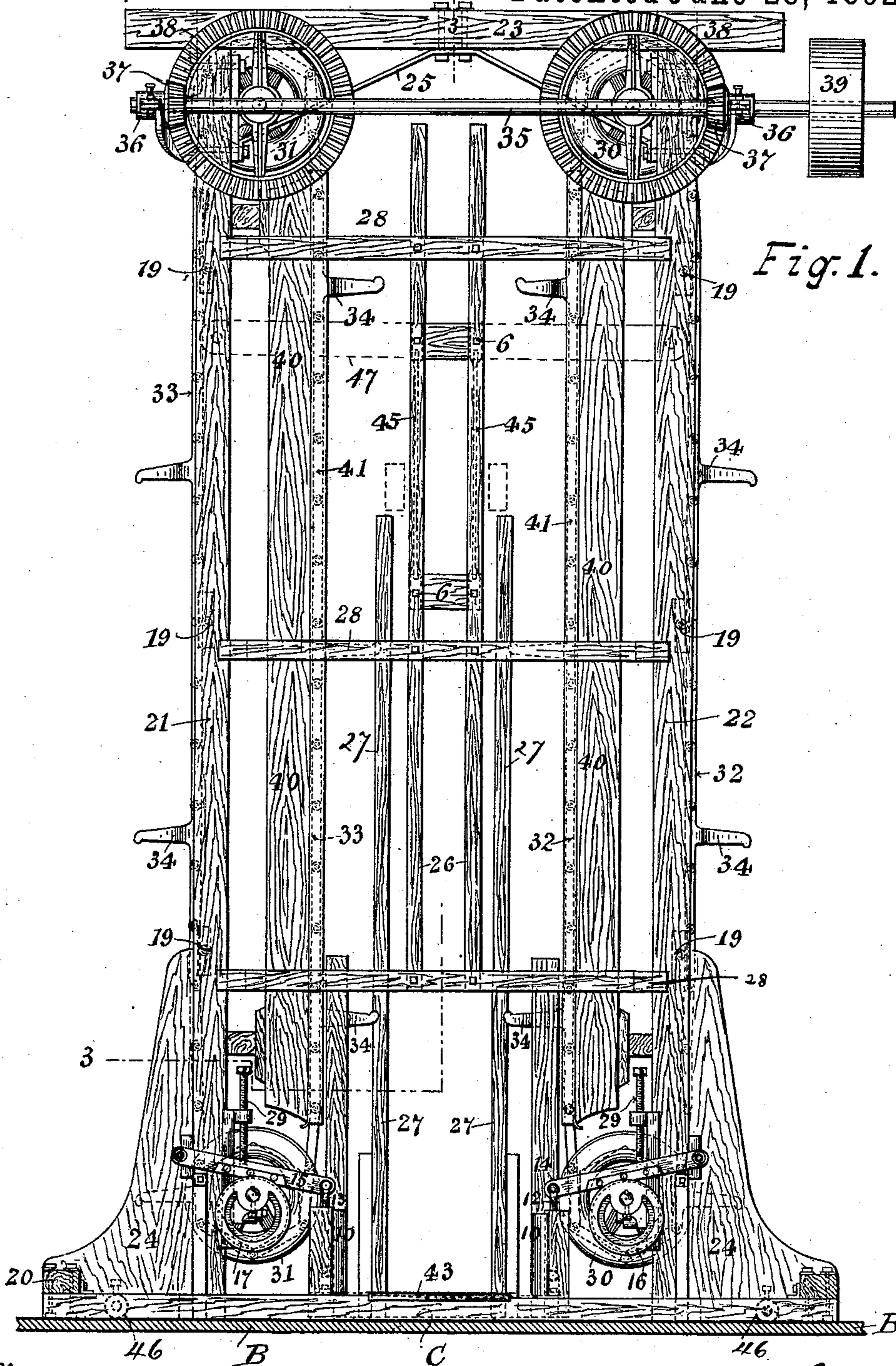
(No Model.)

4 Sheets—Sheet 1.

C. A. STERLING.
BARREL ELEVATOR.

No. 477,874.

Patented June 28, 1892.



Witnesses
Chas. Hanmann
Geo. M. Graham

Inventor
Chas. A. Sterling
By his Attorney
Chas. H. Corbin

(No Model.)

4 Sheets—Sheet 2.

C. A. STERLING.
BARREL ELEVATOR.

No. 477,874.

Patented June 28, 1892.

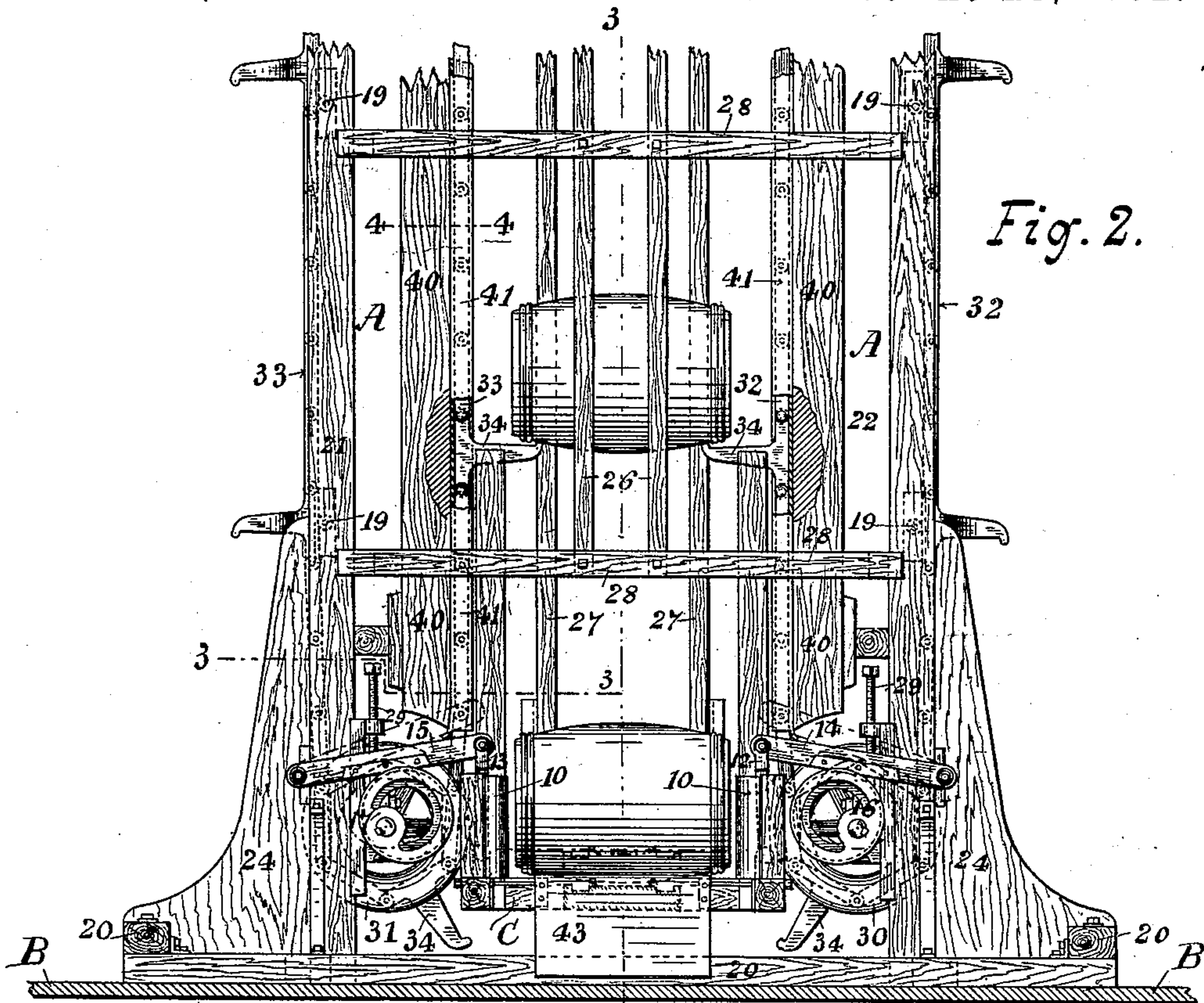


Fig. 2.

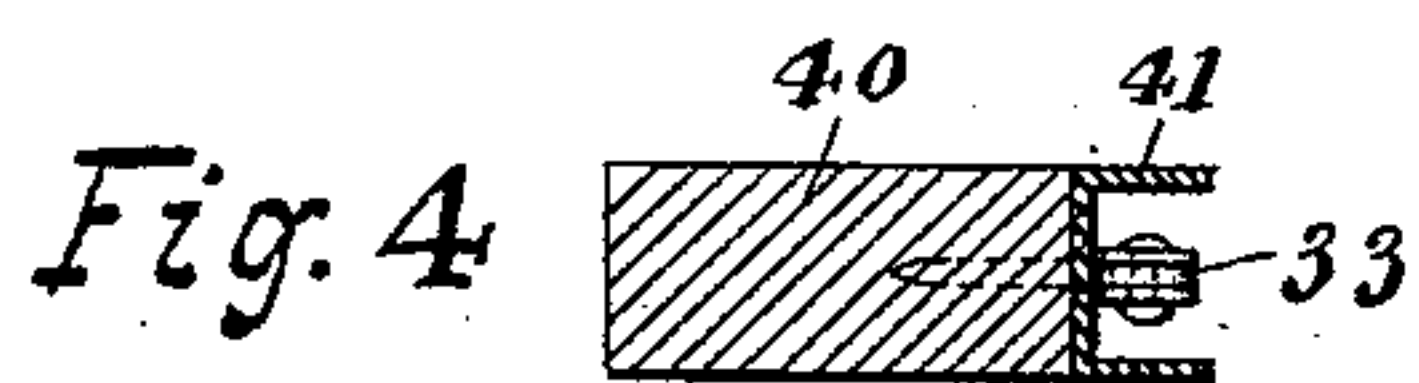


Fig. 4.

Fig. 3.

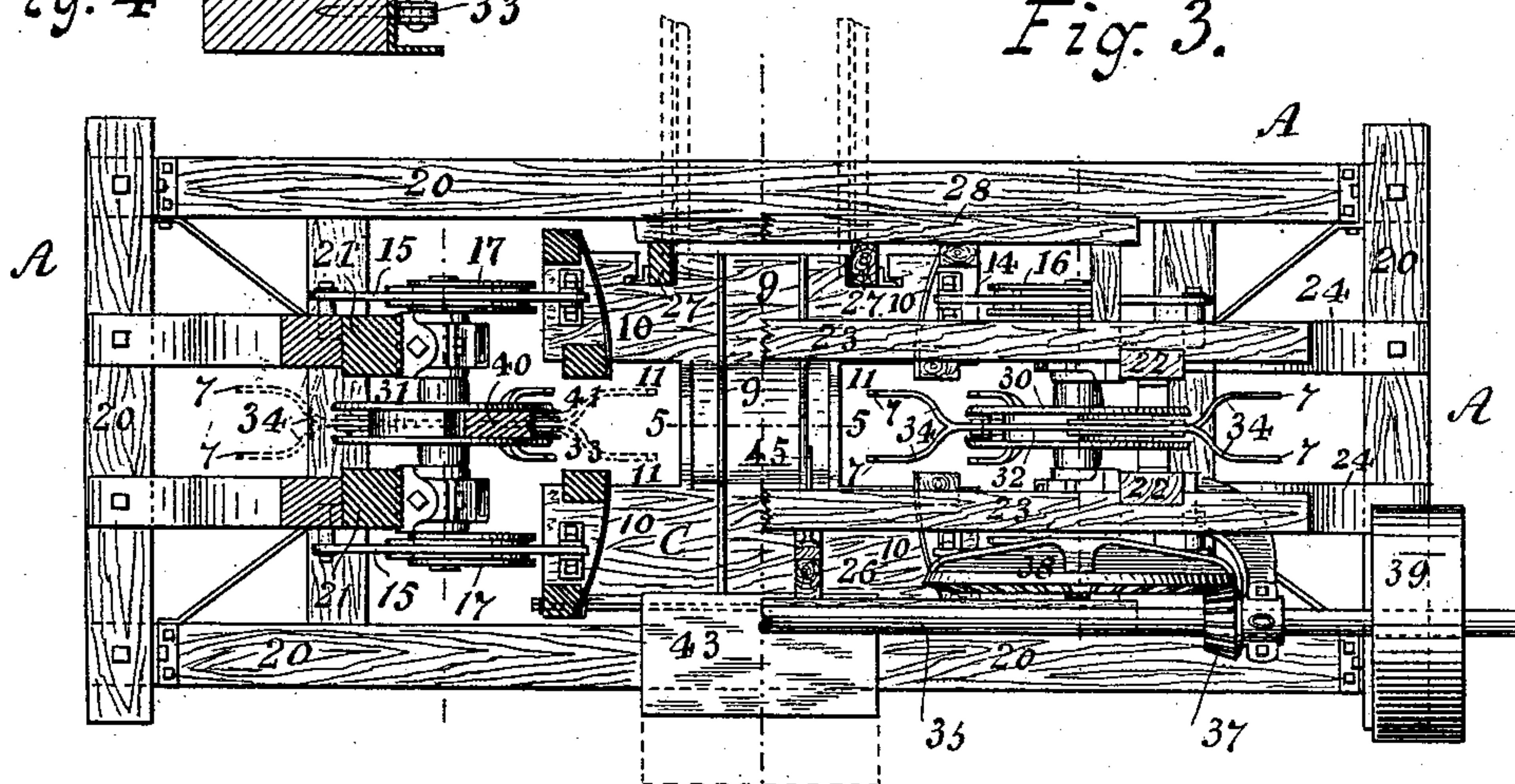


Fig. 5.

Witnesses
Chas. Hanemann
L. M. Graham

Inventor
Chas. A. Sterling
By his Attorney
Chas. W. Torrey

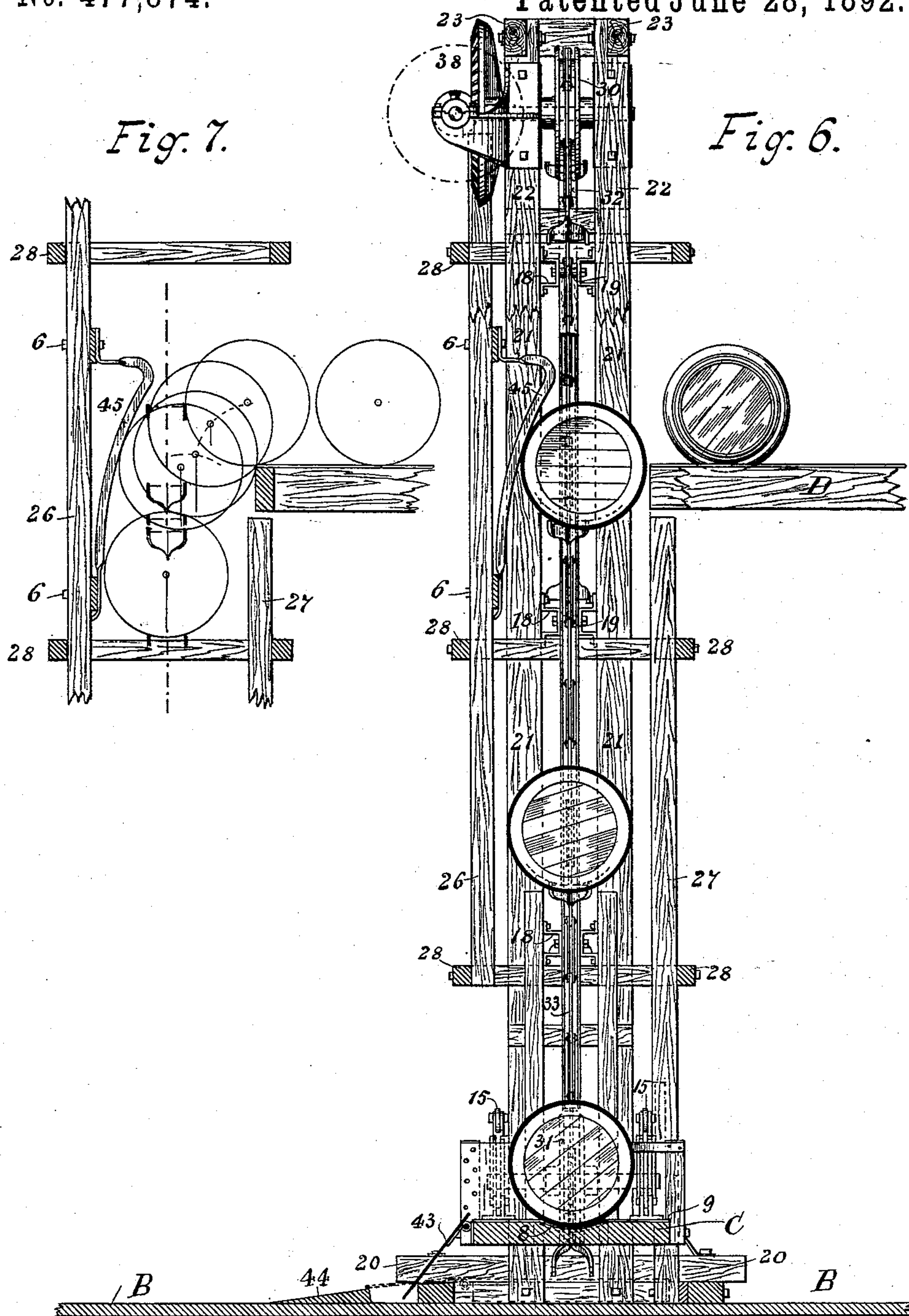
(No Model.)

4 Sheets—Sheet 3.

C. A. STERLING.
BARREL ELEVATOR.

No. 477,874.

Patented June 28, 1892.



Witnesses
Chas. Hanemann
G. M. Graham

Inventor
Chas A. Sterling
By his Attorney
Chas W. Forbes

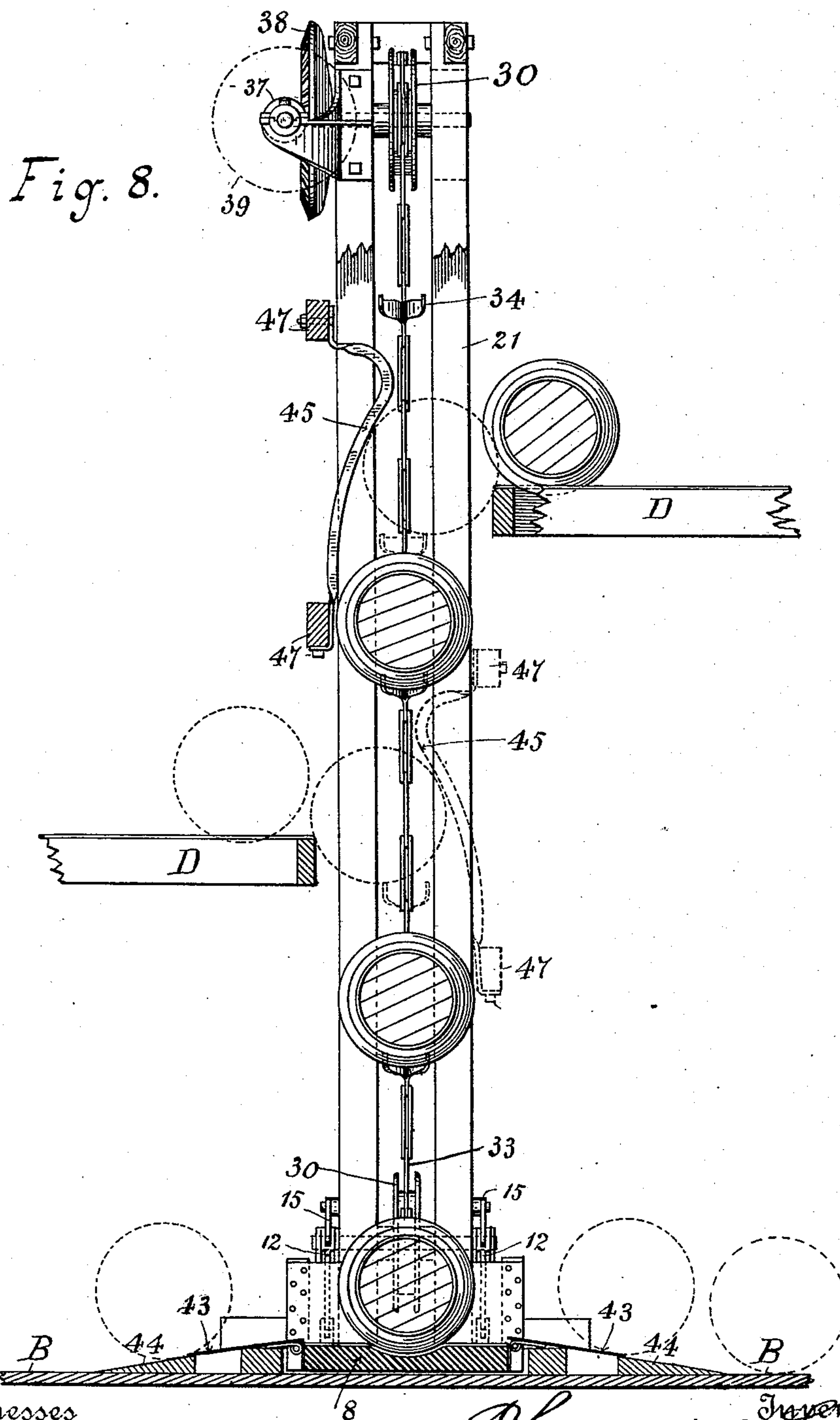
(No Model.)

4 Sheets—Sheet 4.

C. A. STERLING.
BARREL ELEVATOR.

No. 477,874.

Patented June 28, 1892.



Witnesses
Chas. Hanimann
N. Marler

Inventor
Charles A. Sterling
By his Attorney
Phas W. Dorless

UNITED STATES PATENT OFFICE.

CHARLES A. STERLING, OF ORANGE, NEW JERSEY.

BARREL-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 477,874, dated June 28, 1892.

Application filed June 12, 1891. Serial No. 396,050. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. STERLING, a citizen of the United States, residing at Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Barrel-Elevators, of which the following is a specification.

The object of the present invention is to provide a portable or stationary structure having a base substantially on a level with the floor or foundation upon which it rests, thus dispensing with the usual "well" or space for the passage of the carriers below the plane at which the package is loaded or received thereby, and also a structure by which the package may be loaded or discharged directly to or from either side of the elevator.

The mechanism is contained in a suitable frame-work, which may be fixed or set on small rolls to permit its being moved from place to place, and embraces endless chains or equivalent devices turning around sheaves arranged at the top and bottom of the structure, the endless chains with their active and return portions lying in the same vertical plane, with their active portions or lengths directly opposed to one another, with a space between them for the reception and elevation of the package, whereby the same may be loaded or discharged directly at either side, as may be desired. This disposition of the elevating-chains provides for the lift of the package in the space between them and decreases the lateral space occupied thereby, which enables the elevator to extend upward in close proximity to the place at which the package is to be elevated, the width of the elevator being disposed in the direction of the axis of the package. The endless chains are driven in unison at the same surface speed and are each provided at suitable intervals with lateral carriers projecting into the space between the chains, whereby the package is caught at its ends simultaneously and elevated to the point desired. If necessary, the active portions or lengths of the chains may move upwardly in or against a vertically-arranged guide, which will properly direct the chains and hold them in true vertical line against any tendency to buckle or to swing sidewise during their operation.

With the elevator is combined a movable

platform to receive the package to be elevated, which is arranged to be automatically moved with the package to present the latter in proper position to be taken by the carrier. This platform is mounted about level with the elevator-base in the space between the opposed active portions of the elevating-chains, and thus is in position to readily receive the package without any extra manipulation of the latter, and at the proper time the platform and package are raised to a height sufficient to present the ends of the package in the path of the succeeding opposed pair of carriers, which receive the package, remove it from the platform, and elevate it, whereupon the platform may return to its normal position ready to receive and move another package into proper position to be taken by the next succeeding pair of carriers. At the desired point at which the package is to be delivered from the elevator there is provided a discharging cam or abutment that may be changed to different positions and to opposite sides of the structure to effect the discharge of packages to either side of the elevator and at different heights, against which the package is carried as it is elevated and which moves it from the carrier onto the floor or platform or other suitable place for the purpose.

With this general understanding of the improved structure a detailed description thereof will now be given, reference being had to the accompanying drawings, which illustrate a practical embodiment of the invention.

In said drawings, Figure 1 is an elevation looking from its rear or breast side. Fig. 2 is a similar view of the lower portion of the elevator with a portion broken away to expose the chain and showing the moving platform in a changed position with a package thereon and another being elevated. Fig. 3 is a partial plan and horizontal section taken on the line 3 3 of Figs. 1 and 2. Fig. 4 is a detail horizontal section taken on the line 4 of Fig. 2, showing particularly the vertical guide for the active portion of the chain. Fig. 5 is a detailed vertical section on the line 5 of Fig. 3 of the moving platform on which the packages are placed. Fig. 6 is a transverse vertical section on the central line 6, Fig. 2, with the upper portion of the structure in

side elevation, showing several packages in position. Fig. 7 is a detail transverse vertical section of a portion of the structure, illustrating in diagram the operation of automatically delivering a package. Fig. 8 is a transverse vertical section showing the structure constructed to receive and, by changing the abutment, as shown in dotted lines, to deliver the package at either side.

10 The structure consists of a frame-work A, (shown of wood,) but may be composed of iron or steel, which consists of a rectangular skeleton base 20, adapted to rest upon a floor or other foundation B, and may have provision, as the rolls 46, for rolling it along the floor to the desired position. From the base rise two pairs of vertical posts 21 22, united together at the top of the structure by a pair of horizontal beams 23, and otherwise braced and steadied by knees 24 at the base and by tie-bars 25 at the top. It may also be provided with a pair of front and rear breast posts or guards 26 27, supported from the vertical posts 21 22 by horizontal bars 28.

25 At the top and bottom of the structure there is supported in suitable bearings two pairs of grooved polygonal-faced sheaves 30 31, around each pair of which is stretched endless elevating-chains 32 33. The lower sheave of each pair is mounted in adjustable bearings adjusted by screws 29 to move said lower sheaves to stretch the chains more or less taut. The pairs of sheaves are arranged a distance apart with their axes transverse of the structure and affording a central vertical space between the active portions of the chains for the movement between them of the packages in being received, elevated, and discharged. The chains, with their active and idle portions, and the packages being elevated thus lie in the same vertical plane. In other words, the axes of the sheaves are arranged at right angles to the vertical line of movement of the elevating-chains as distinguished from those arrangements in which the axes of the sheaves are parallel with such movement.

The elevating-chains are each provided at intervals with projecting carriers 34, rigidly connected thereto to extend outward horizontally from the vertical face of the chains and so disposed that a carrier of one chain will act in unison with a carrier of the other chain—in other words, so that a pair of carriers will simultaneously come into active position in turning the lower sheaves 30 31. These carriers are of yoke shape, providing a pair of separated fingers 7, the ends of which are preferably turned up slightly, for a purpose hereinafter explained. Suitable rotation is imparted to the sheaves so that the chains move in unison and at the same surface speed from a horizontal shaft 35, journaled in bearings 36, supported on the frame-work through a pair of bevel-pinions 37, secured to the shaft, which mesh with bevel-wheels 38 fast, to the axis of the upper pair of sheaves 30 31,

said shaft being driven from a portable engine or from some other driver or driven shaft by a belt passing around a pulley 39, carried by the horizontal shaft. In order to steady and also guide the chains along their active portions, there may be provided for each chain a vertical guide 40, extending between the top and bottom sheaves immediately in rear of the active portion of each chain and supported in position from the inner side of the vertical posts 21 22. Each of the vertical guides may carry a trough or U-shaped plate 41, (see Figs. 2 and 4,) which serves as a metal facing for the guide, which in this instance is of wood, and against which plate and between the flange of which the chain travels. The opposite or idle portion of the chain is steadied by a number of idlers; or it may be by rods 19, held by U-shaped brackets 18, secured to the opposite inside faces of each pair of vertical posts 21 22.

The improved structure also provides means for presenting the packages in succession in position to be taken by the carriers of the elevating-chains, so that in the absence of the usual well, in which the lower sheaves have heretofore been placed, the package, normally on substantially the same level as the elevator-base, is moved into the path of the carriers to be taken thereby and elevated. These means consist of a package-receiving platform C the surface of which is normally about on a level with the base of the elevator, so that the packages—as, for instance, barrels—may be easily moved or rolled onto the platform. This platform C is interposed between the vertical posts 21 22 and in a recess in the base 20, so as to receive and afterward present the package between the opposed faces of the active portions of the two chains.

The platform C is moved from its normal lower position to its upper position by suitable mechanism acting in time with the passing of the carriers of the elevator-chains. This mechanism in the present embodiment consists of two pairs of cams 16 17, fast, respectively, on the ends of the shafts of the lower sheaves, against which cams bear levers 14 15, pivoted at one end to the vertical posts 22 21 and at the opposite end to connecting-rods 12 13, pivotally connected to the platform C. The two pairs of cams are arranged to act in unison, so that the platform is raised bodily in a horizontal condition.

The platform may be provided with runners or bearing-strips 9, (see Figs. 3 and 5,) extending transversely across it with a depressed central portion 8 to aid in locating the package centrally with respect to the line of vertical movement of the elevating-carriers 34. The sides of the platform are recessed or cut away at 11 to allow the free passage of the carriers past the platform and against the under side of the package resting thereon. It is also provided with vertical side guards 10 to cause the package to take a central position on the platform with its edges extend-

ing equally over the recesses 11. The platform may be furthermore provided with an extension 43, hinged to the front side of the platform and forming a convenient means for bridging the space between the floor B or inclined runway 44 and the platform.

The elevator, also, has provision for discharging the packages at the proper point onto the upper landing or floor D. This is effected by a cam or abutment 45, extending into the space between the elevating-chains, (shown in Fig. 1 of duplex form,) secured to the inner side of the guards 26, and located in proper position with respect to the floor D by bolts 6.

It is obvious that the guards 26 and 27 may be dispensed with or the guard 26 terminate on a level with the opposite guard 27, and that the discharging cam or abutment may be secured to a removable cross-piece 47, (see Fig. 8 and dotted lines Fig. 1,) which cross-piece, with the cam, may be raised or lowered bodily to correspond with the point of discharge for the packages, and which may also be removed and secured to the opposite side of the elevator to discharge the packages from the side opposite that which is now indicated in the drawings, as clearly shown in Fig. 8. The receiving-platform C is also adapted to receive the packages from either side of the elevator, it being only necessary in the structure illustrated in Fig. 6 to terminate the guards 27 substantially on a level with the lower ends of the guards 26 or remove the same entirely, as shown in Fig. 8, in which also the extension 43 may be duplicated, if desired, upon the opposite side of the platform.

From this specific description of the improved elevator its general operation will be readily understood. It may be stated, however, assuming that barrels are to be elevated from the floor B to an upper floor D, the elevating-chains being set in motion by the operation of the shaft 35, that the attendant will roll the barrel from the floor B across the extension 43 (the platform being in its low or normal position, as indicated in Fig. 1 and dotted lines, Fig. 6) onto the platform C, so that it rests in the depression 8, with both ends of the barrel projecting evenly over the recesses 11 in the platform. As soon as the barrel is at rest on the platform the cams 16 17 will commence to raise the latter with the barrel, as indicated in Figs. 2 and 6, and as soon as the upper surface of the platform is substantially on a level with the horizontal axis of the lower sheaves the next succeeding pair of carriers 34 in the continuous movement of the chains will come into contact with the under side of the barrel, and continuing to move will raise the latter from the platform and carry it upward in the manner illustrated in Fig. 2. As the barrel nears the upper floor D it meets the cam or abutment 45, which, as indicated in diagram in Fig. 7, gradually forces the barrel from off the car-

riers 34, aided by the continuous raising movement of the latter, onto the floor D. As soon as the barrel is taken by the carriers from the platform C the cams 16 17 lower or allow the platform to return to its normal position ready to receive another barrel to elevate it in position to be taken by the next succeeding pair of carriers. The turned-up ends of the fingers of the carriers 34 in the case of elevating barrels act to catch the chimes or hoops of the barrel, and thus tend to hold it securely in position.

From the foregoing it will be seen that by mounting the elevating-chains in the same vertical plane with a space between their active portions the packages may be delivered to the carriers of the chains from either side of the structure, as well as enabling them to be discharged directly to either side thereof, without reversing the direction of motion of the elevating chains or mechanism. This same arrangement of the elevating-chains also brings the structure within a comparatively narrow compass widthwise, and also renders it possible to mount the structure close up to the receiving-point of the packages and close up to the discharging-point thereof.

The improved structure also renders it possible to dispense with the usual well of endless-chain elevators, heretofore essentially necessary, thus enabling the present structure to be used as a portable elevator adapted to be moved to any position desired for use—as, for instance, adjacent to a stack of barrels—instead of making it a stationary elevator, to which the packages must be carried for elevating and from which they must be carried upon their discharge to the place of storage.

The package receiving and delivering platform, automatically operative, renders it possible to dispense with any hand lifting of the packages to present them in proper position to the carriers; at the same time compensates for the omission of the usual well; is equally adapted to receive the packages from either side of the structure, and being mounted in the space between the elevator-chains presents the package directly in line with the vertical movement of the carrier and avoids jar to the apparatus.

The subject-matter of the third clause of claim is applicable to an elevator wherein the elevating chains and connections are arranged in the same vertical plane as shown, and whereby an open space is provided for loading and discharging the package at either side, and wherein the operating mechanism is located in a well or beneath the floor or level at which the passage is received, as I am not aware that any elevator has ever before been devised capable of discharging the package at either side thereof without changing or reversing the movement of the elevating-chains.

What is claimed is—

1. An elevator comprising elevating endless

chains having a package-space between and provided with carriers projecting into said space, the respective parts located and operating at and above the level at which the
5 package is received and in the same vertical plane, whereby the usual well-hole is dispensed with and the package received or discharged from either side, as set forth.

2. The combination, in an elevator, of elevating endless chains arranged with a package-space between and provided with carriers projecting into said space, and a loading-platform adapted to receive the package from either side on a level therewith, and mechanism to elevate the platform into the path of
15 the carriers, the respective parts all operating at and above said level, as set forth.

3. An elevator comprising elevating endless chains arranged with an intermediate package-space and provided with carriers relatively arranged in the same plane, whereby an open space is provided, so that the package may be delivered from either side without changing the direction of motion of the elevating-chains, in combination with an intersecting abutment, substantially as described.
20 25

In witness whereof I have hereunto set my hand, this 21st day of May, A. D. 1891, in the presence of two witnesses.

CHAS. A. STERLING.

Witnesses:

JAS. A. HAND,

PAUL. D. SPENCER.