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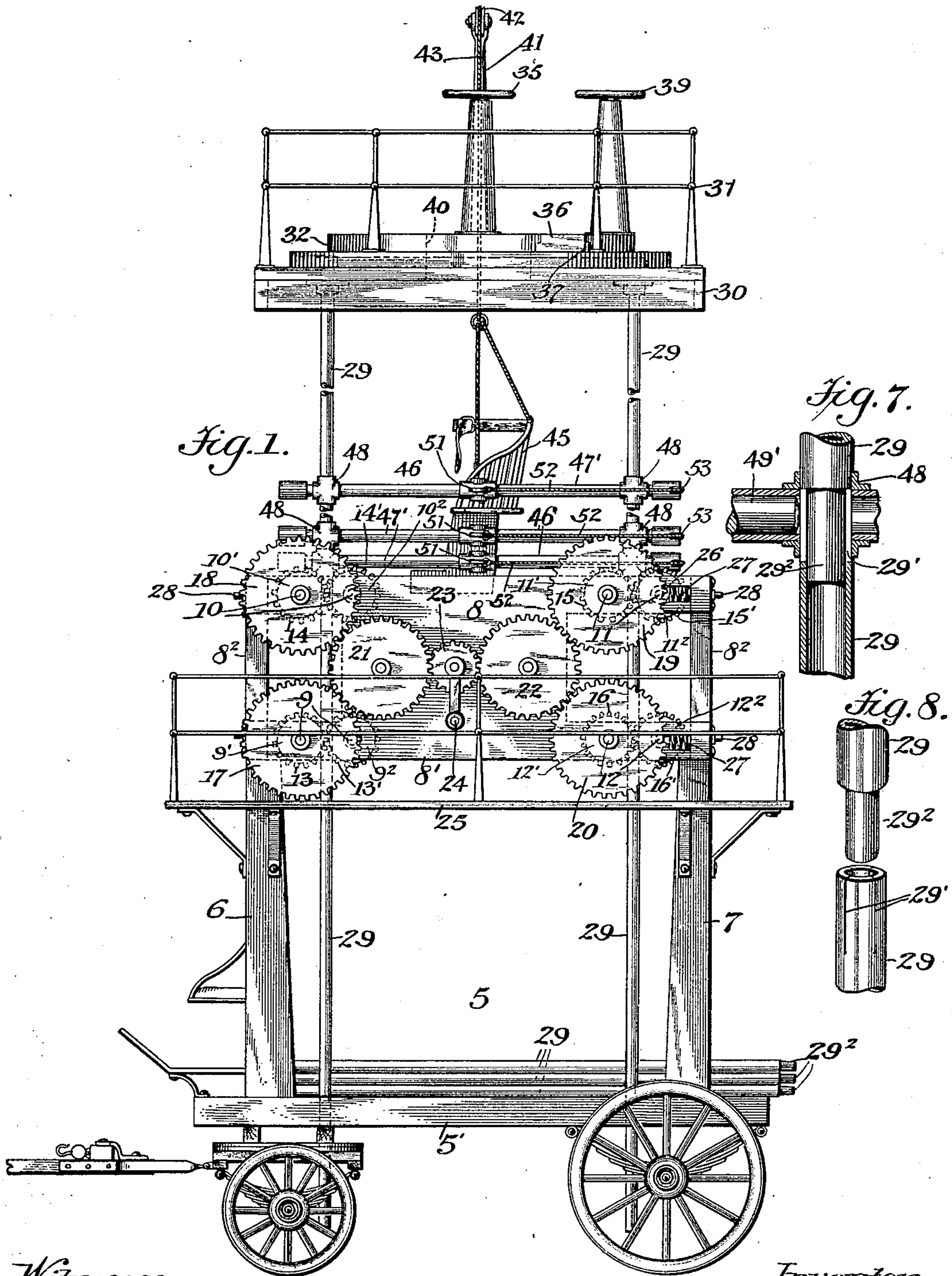
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COMBINATION FIRE ESCAPE AND WATER TOWER.

(Application filed May 14, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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(Application filed May 14, 1900.)

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2 Sheets—Sheet 2.

Fig. 2.

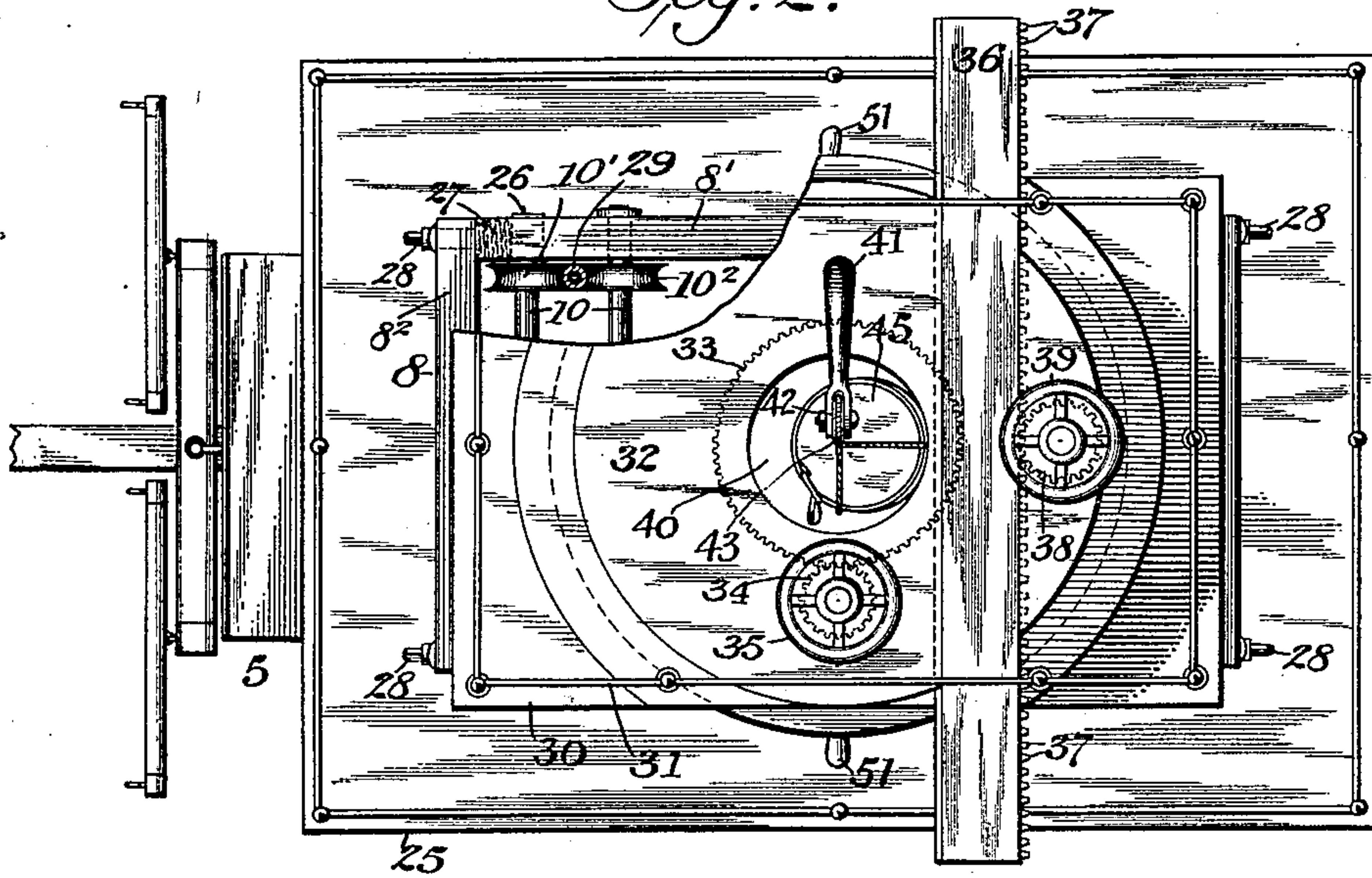


Fig. 3.

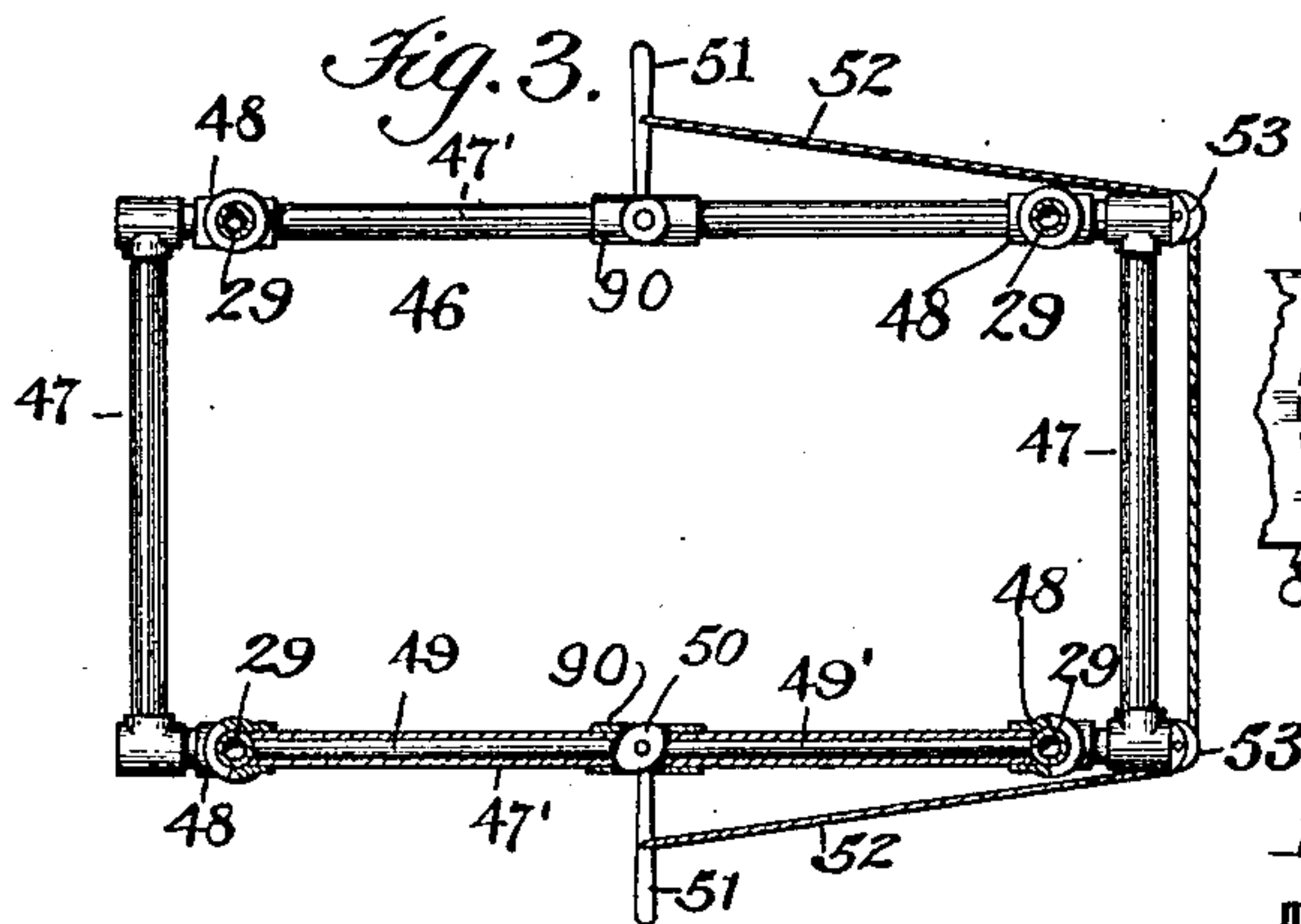


Fig. 4.

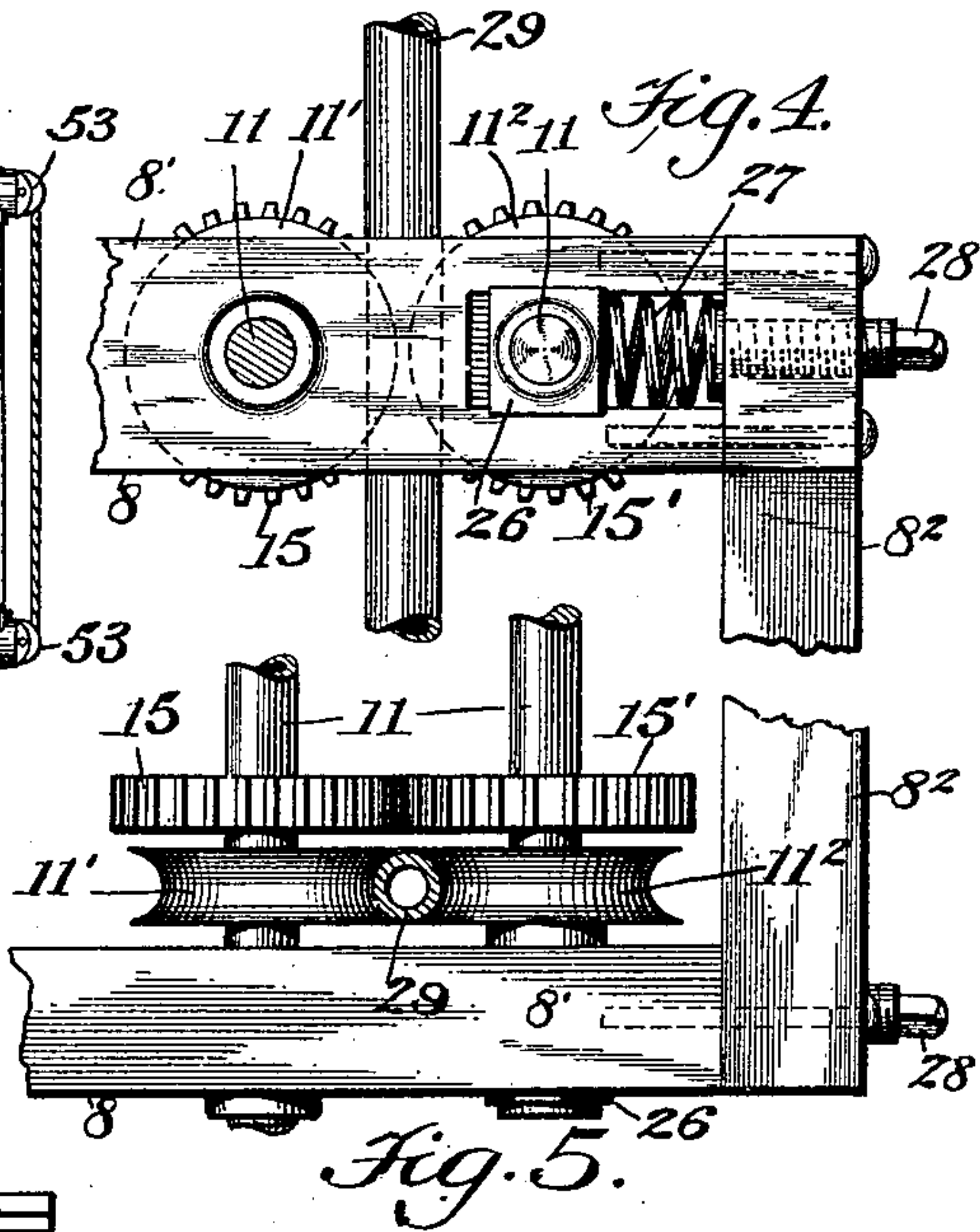
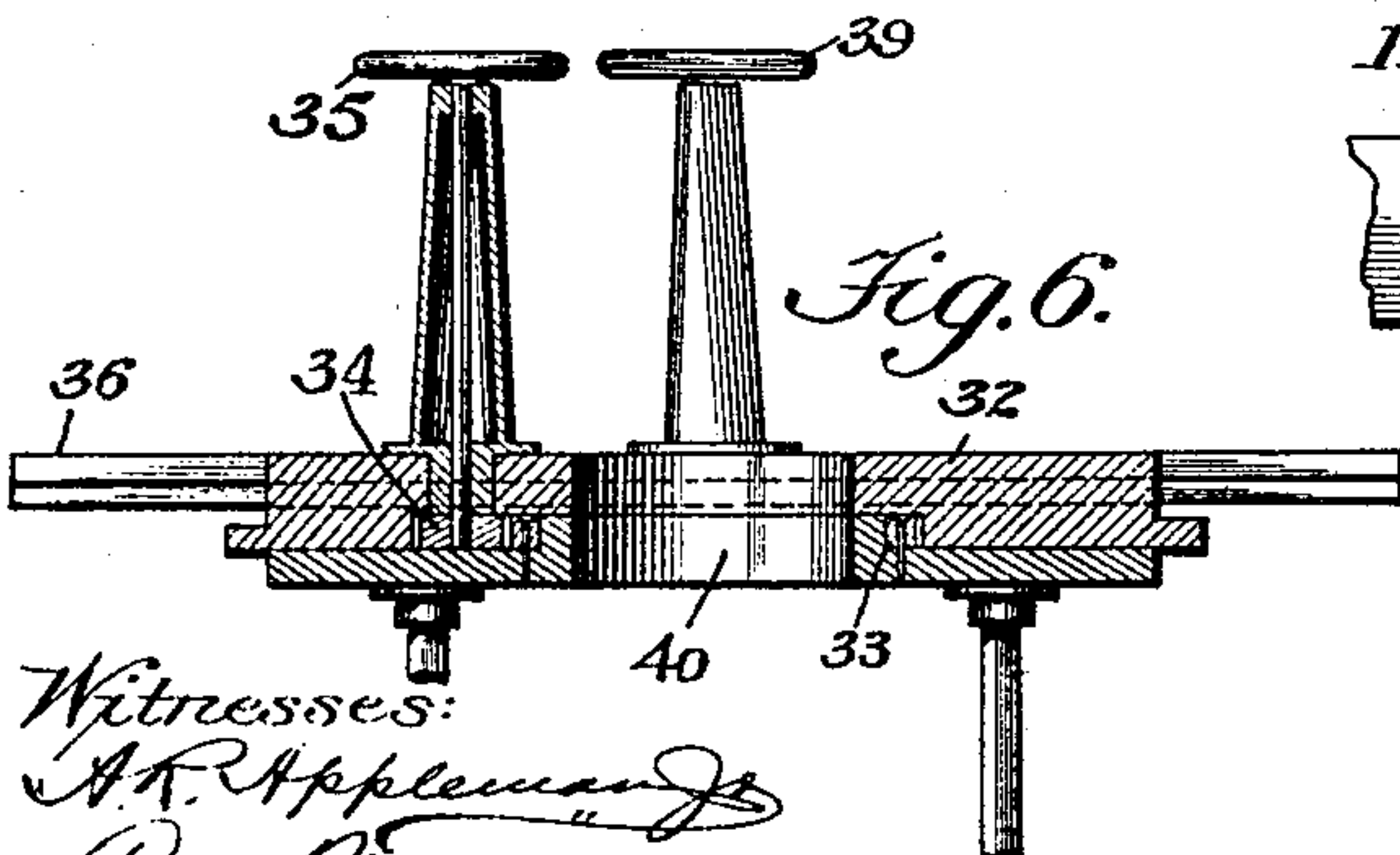


Fig. 5.

Fig. 6.



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# UNITED STATES PATENT OFFICE.

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## COMBINATION FIRE-ESCAPE AND WATER-TOWER.

SPECIFICATION forming part of Letters Patent No. 669,180, dated March 5, 1901.

Application filed May 14, 1900. Serial No. 16,551. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES PULLAR, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in a Combination Fire-Escape and Water-Tower, of which the following is a specification.

My invention relates to portable towers for fire-department or other use; and it has for one object the provision of a tower of that kind which is capable of vertical extension to the desired height and the platform of which may be lowered to bring the same and its connected parts to a position where they can readily be transported without undue swaying or vibratory movement.

A further object of the invention is the provision of an extensible tower having a platform which may be adjusted to bring the firemen or others thereon to any desired angular position with reference to a building or other structure.

A further object of the invention is the provision, in connection with the rotatable platform of a tower, of a ladder or slide which may be thrust laterally from the tower into a window of a building or onto an abutment thereof, and thus serve the purpose of a bridge over which persons or property may be carried to a position of safety.

A further object of the invention is the provision of means for lowering rescued persons or property from the platform of the tower or for elevating firemen or appliances used by them thereto.

A further object of the invention is the provision of improved means and mechanism cooperating with said means for extending the platform of the tower to the desired elevation.

Portable towers as now constructed are capable of extension only to a certain height, and are consequently limited in efficiency, and if made of the proportions necessary to reach abnormal heights they are so cumbersome and bulky that their use is almost prohibitive; but with my invention this defect is obviated and a strong well-braced structure capable of any desired vertical extension is produced and one which when lowered to its normal height is compact and serviceable and can readily be transported.

In the accompanying drawings, Figure 1 is a side elevation of my invention. Fig. 2 is a plan view, part of the platform being broken away to show mechanism below said platform. Fig. 3 is a plan view, partly in section, of one of the frames employed in connection with the elevating-bars. Fig. 4 is a side view of a set of friction-rolls for elevating and lowering the vertical bars or pipes. Fig. 5 is a plan view of a set of said friction-rolls, showing the bar to be elevated in section. Fig. 6 is a sectional view of the platform and mechanism carried thereby. Fig. 7 is a detail view of the extension-joint of the vertical bars or pipes, and Fig. 8 is a view of said joint before two bars have been coupled together and passed through the frame.

Similar characters designate like parts in the different figures of the drawings.

Referring to the drawings, the numeral 5 designates a vehicle of any desired kind (shown as a wheeled truck) having a platform 5' and vertical standards 6 and 7, to the upper portions of which is secured a frame 8, having side bars 8' and end bars 8<sup>2</sup>, said frame being at its top of a general rectangular outline. Journaled in bearings of this frame are sets of shafts (designated, respectively, by the numerals 9, 10, 11, and 12,) the sets 10 and 11 being located above the sets 9 and 12, and each set consisting of two intergeared shafts, as will hereinafter be described. Near one end of each of these shafts a grooved friction-wheel is mounted, the friction-wheels of the shafts 9 being designated by 9' and 9<sup>2</sup>, those of the shafts 10 by 10' and 10<sup>2</sup>, those of shafts 11 by 11' and 11<sup>2</sup>, and those of shafts 12 by 12' and 12<sup>2</sup>. At their opposite ends the shafts just mentioned are provided with sets of intermeshing gears, preferably of the "spur" variety, although other kinds may be used, (designated, respectively, by the numerals 13 13', 14 14', 15 15', and 16 16',) and on the ends of the shafts 9, 10, 11, and 12 large gear-wheels (designated, respectively, by the numerals 17, 18, 19, and 20) are mounted.

Journaled in the frame 8 are gears 21 and 22 of comparatively large size, which are in mesh with the gears 17, 18, 19, and 20, and said gears 21 and 22 are driven by a smaller gear 23, operated by a crank 24.



Connected to the standards 6 and 7 is a platform 25, having the usual guard-rails, and this platform is for the purpose of sustaining the men who operate the gearing and friction-rolls just described.

Suitable means are provided for adjusting one of each pair of friction-rolls toward the other, and in the construction illustrated the journals of one of the roll-shafts are mounted in boxes 26, sliding in slots of the frame and normally forced forward by springs 27, (one of which is shown in Fig. 4,) the tension of said springs being regulated by screws or equivalent devices 28.

Coming now to another part of my invention, the numeral 29 designates tubular bars which are stored on the platform of the vehicle in readiness for use, and at one end each of these bars is slitted, as at 29', and the opposite end is provided with a reduced portion or tenon 29<sup>2</sup>, adapted to fit into the tubular slitted end 29' of another bar.

Constituting a part of my elevating apparatus is a tower-platform 30, and this platform is surrounded by a guard-rail 31, which, in addition to subserving its usual function, also may be employed as a convenient rest for hose in use by firemen on the platform in case of a conflagration. Mounted for rotative movement in this platform is a turn-table 32, connected to which is a gear-wheel 33, the latter being operated by a pinion 34, attached to a shaft, which may be actuated by a hand-wheel or other device 35. By the means just described the turn-table 32 may be rotated to bring the firemen or other persons thereon in the proper position for directing a stream from the hose to the desired part of the building. Mounted in a groove or guideway of the turn-table is a ladder or slide 36, having a rack 37 on its side, which is in engagement with a pinion 38, carried by a shaft actuated by a hand-wheel 39, and by means of this device the truck carrying the tower and platform may be located at a considerable distance—for instance, across the street from the building—and the ladder or plank be thrown across the intervening space and made to engage with a window-sill or other abutment, thus serving as a means for rescuing persons or property. By means of the rotary adjustment of the turn-table described any desired angular position of said ladder or slide or of a line of hose carried by the turn-table may be effected, and thus the device may be put to the desired use in rescuing persons and property and in extinguishing fires. Centrally the turn-table is provided with a large opening 40, and adjacent to said opening a standard 41 is erected, upon which is journaled a sheave 42. Over this sheave passes the rope 43, which is connected at its lower end to a basket, seat, or other suitable device 45, by which firemen or their assistants may be elevated to the platform 30 and persons and property may be lowered therefrom.

When the tower is to be employed for the

purpose of reaching buildings of moderate height, rods 29 are inserted between the friction-rollers 9' 9<sup>2</sup>, 10' 10<sup>2</sup>, 11' 11<sup>2</sup>, and 12' 12<sup>2</sup>, and the gearing for actuating said rollers may be started in motion by turning the crank 24. As these rods are elevated they pass loosely through fittings of a frame, to be hereinafter described, and their upper ends are inserted in sockets on the under side of the platform 30. This frame is designated in a general way by the numeral 46, (see Fig. 3,) and is preferably formed of rods or pipes 47 47', coupled together at their ends. Adjacent to each of the end bars or pipes 47 the side bars or tubes 47' are provided with tubular fittings 48, through which the bars 29 are passed, and when it is desired to extend the height of the platform 30 and its turn-table 32, as exigencies may require, a second set of bars 29 is introduced between the friction-rollers with the slitted ends 29' thereof uppermost, and this set is advanced by said rollers until the ends thereof are inserted within the fittings 48 and over the tenoned ends 29<sup>2</sup> of the first set of bars. The two sets of bars are then rigidly clamped together by rods 49 49', which are fitted for reciprocatory movement in the tubular side bars 47' of the rectangular frame 46 and the ends of which bear against the slitted ends of the bars 29. For actuating these rods any suitable device or devices may be employed, and I have shown for this purpose a cam or eccentric 50, having a handle 51, said cam or eccentric being pivoted within a sleeve 90, fitted over the side bars 47', as shown in Fig. 3. By turning this cam or eccentric by means of the handle 51 the surfaces thereof are caused to act against the rods 49 49' and drive them forward forcibly against the split ends 29' of the bars 29, causing said ends tightly to clamp and bind the tenoned ends 29<sup>2</sup> of the first set of bars.

In order that all four of the split ends of the bars to be added to the first set of bars in extending the height of the tower may be operated upon, I preferably connect the handles 51 of the cams or eccentrics 50 by a cord 52, passing over pulleys 53, (see Fig. 3,) so that when one cam is actuated the other will also be turned and the rods or bars 49 49' will be caused simultaneously to act upon the slitted ends 29'. After this connection has been effected the platform 30 may be elevated for another distance equaling about the length of the set of bars added, and so on until the desired elevation is attained.

It is of course to be understood that a series of frames 46 is to be carried by the vehicle and that these are to be coupled on to the pipes or bars 29, as circumstances may require.

In Fig. 1 the bars 29 are shown separated at intervals, and three of the frames 46 are illustrated as located thereon. By the means described any desired elevation of the platform 30 compatible with safety and convenience may be obtained and the frames 46



and their attachments act as braces rigidly to connect the bar-sections 29 and also to prevent them from vibration or lateral movement.

5 Any convenient means may be employed for preventing back action of the friction-rollers when in contact with the bars, and I have not deemed it necessary to illustrate such devices, although of necessity some suitable stop must be adopted for preventing the gearing from turning backward and permitting the descent of the platform 30 and the connected bars 29.

My invention is not limited to the precise details illustrated and described, for the gearing for actuating the friction-rollers may be variously modified without departure therefrom, nor is it limited to any specific device for rotating the turn-table on platform 30' or for projecting the slide or ladder 36.

If desired, when the bars directly in contact with the platform are lowered to the limit of their downward movement the platform may be lifted off the ends of said bars and stored on the bed of the vehicle, the invention not being limited to any particular way of removably connecting said bars and platform.

Having described my invention, I claim—

30 1. The combination, with a platform, of a series of bars for supporting said platform; a bracing-frame connected to and movable with the bars; and a series of sets of friction-rollers for raising the bars.

35 2. The combination, with a platform, of bars removably connected thereto; rollers for elevating the bars; additional bars constructed to be coupled to the first-named bars; a bracing-frame; and means carried by said frame for connecting the bars and additional bars to each other and to the frame.

40 3. The combination, with a platform, of means for elevating said platform; bars supporting the platform and with which the elevating means engage; a bracing-frame secured to and movable with the bars; a turntable carried by the platform; and a slide mounted on the turn-table.

45 4. The combination, with a platform, of a plurality of bars for supporting the platform; a bracing-frame connected to and movable with the bars; means for engaging the bars to raise and lower the platform; a turn-table mounted on the platform; gearing for actuating the turn-table; a slide carried by the turn-table; and gearing for actuating said slide.

50 5. The combination, with a platform, of a series of bars for raising said platform; a bracing-frame connected to and movable with the bars; friction-rollers in engagement with said bars; and means for actuating said friction-rollers.

55 6. The combination, with a platform, of a series of bars removably connected therewith; sets of friction-rollers for raising said bars; a series of additional bars adapted to be in-

serted between said rollers and to engage the first series of bars; and means for detachably coupling one series of bars to the other series of bars.

7. The combination, with a platform, of a series of bars removably connected therewith; a series of friction-rollers for raising said bars; and a frame having fittings through which the bars pass; and means for connecting the bars to said frame.

8. The combination, with a platform, of a series of bars removably connected to said platform; sets of friction-rollers for raising said bars; a bracing-frame having fittings through which the bars pass; and means for clamping said frame to the bars.

9. The combination, with a platform, of a series of bars removably connected to said platform; rollers for raising said bars; a bracing-frame having fittings through which the bars pass; a series of additional bars for increasing the height of the platform; and means for clamping the first-named series of bars to said additional bars and to the frame.

10. The combination, with a platform, of bars for raising the same; friction-rollers in engagement with said bars; a rectangular frame through which said bars pass; and means for clamping one set of bars to the other set of bars and to the frame.

11. The combination, with a platform, of a series of bars supporting said platform; friction-rollers for raising said bars; a frame for bracing the bars and movable with them; an additional series of bars adapted to be inserted between the friction-rollers and to be connected to the first series of bars; and a device carried by the bracing-frame for clamping the bars together at their ends and for also securing them to said frame.

12. The combination, with a platform, of a series of bars having tenoned ends; friction-rollers for raising said bars; additional bars fitting over the tenoned ends of the first set of bars; and means for connecting and bracing the two sets of bars, said means being movable with the bars.

13. The combination, with a platform, of a series of bars removably connected with said platform and having tenoned ends; friction-rollers for engaging said bars; a series of bars having tubular slitted ends fitted over the tenoned ends of the first-named bars and adapted to be actuated by said friction-rollers when it is necessary to increase the elevation of the platform; a bracing-frame and means carried by the bracing-frame for clamping one set of bars to the other set of bars.

14. The combination, with a platform, of a series of bars removably connected to said platform; a brace connected to and movable with said bars; sets of friction-rollers in engagement with said bars; an additional set of bars; means for coupling the additional bars to the first-named bars; and means for actuating the friction-rollers.

15. The combination, with a platform, of a



series of bars connected to said platform; grooved friction-rollers in engagement with said bars; and gearing for actuating said rollers; and a bracing-frame connected to and  
5 movable with the bars.

16. The combination, with a platform, of a turn-table thereon; a series of bars removably connected to said platform; sets of grooved friction-rollers in engagement with said bars;  
10 additional sets of bars adapted to be passed between said friction-rollers; means for coupling said additional bars to the first-named bars when it is desired to extend the height of the platform; and means for simultane-  
15 ously actuating the friction-rollers.

17. The combination, with a platform and a turn-table, of a series of bars removably connected to said platform; grooved friction-rollers between which said bars pass; gear-  
20 ing for simultaneously actuating said rollers; additional sets of bars adapted to be coupled onto the first set of bars; and means for uniting and bracing the sets of bars.

18. The combination, with a platform, of a series of bars removably connected to said platform; grooved friction-rollers in engage-  
25 ment with said bars one set of rollers being located above the other set; and gearing for simultaneously actuating said friction-rollers.

30 19. The combination, with a platform, of a series of bars removably connected to said platform; grooved friction-rollers for engaging said bars; gearing for actuating said rollers simultaneously; a series of additional bars; means for coupling said additional bars  
35 with the bars in engagement with the platform; a frame; and means carried by the frame for clamping one set of bars to the other set of bars.

20. The combination, with a series of bars and a platform supported by said bars, of means for raising said bars to increase the height of the platform; a rectangular frame having fittings through which the bars pass; a second series of bars; and means carried  
45 by the frame for clamping said second series of bars to the other series of bars.

21. The combination, with a platform, of a series of bars for supporting said platform; a series of devices in engagement with said  
50 bars and adapted to elevate the same; a rectangular frame having fittings through which the bars pass; a second series of bars; and cam-actuated devices carried by the rectangular frame for clamping the second series of  
55 bars to the first series of bars.

22. The combination, with a platform, of a series of bars for supporting the same; a rectangular frame having hollow side bars; fittings carried by said frame, through which  
60 the series of bars pass; rods carried by the side bars; cams for actuating said rods; and a second series of bars coupled to the first series of bars and clamped to said first series of bars by said rods.

23. A clamping-frame for connecting one set of bars to another set of bars, said frame comprising tubular end portions and tubular side portions, in combination with a device  
70 mounted on the tubular side portions for clamping one bar to another bar; said bars; a platform carried by the bars; and means for raising the bars.

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Witnesses:

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