W. W. GARNER.

FOLDING SCAFFOLD FOR SILOS.

APPLICATION FILED JAN. 8, 1917.

1,258,402.

Patented Mar. 5, 1918.

2 SHEETS—SHEET 1.

Fig. 2.

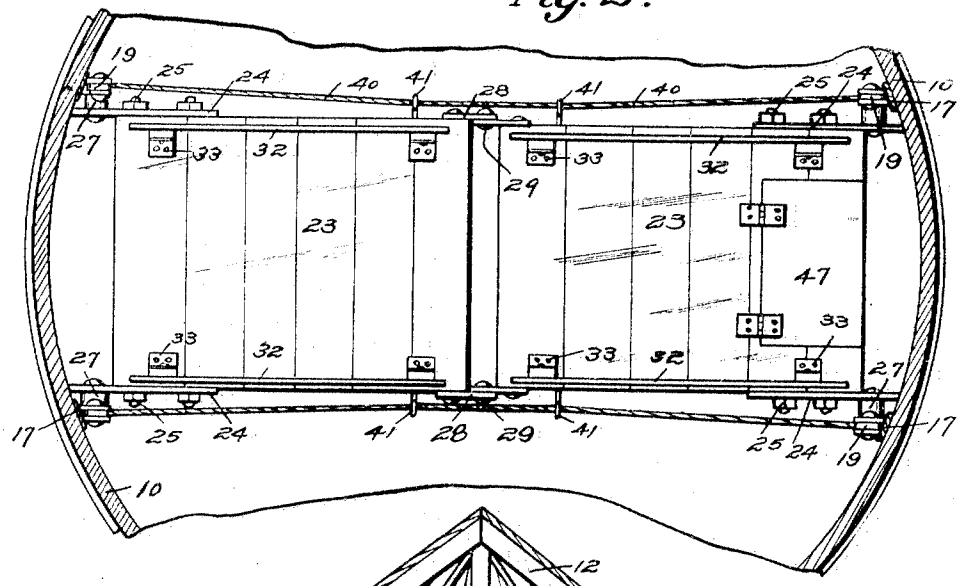
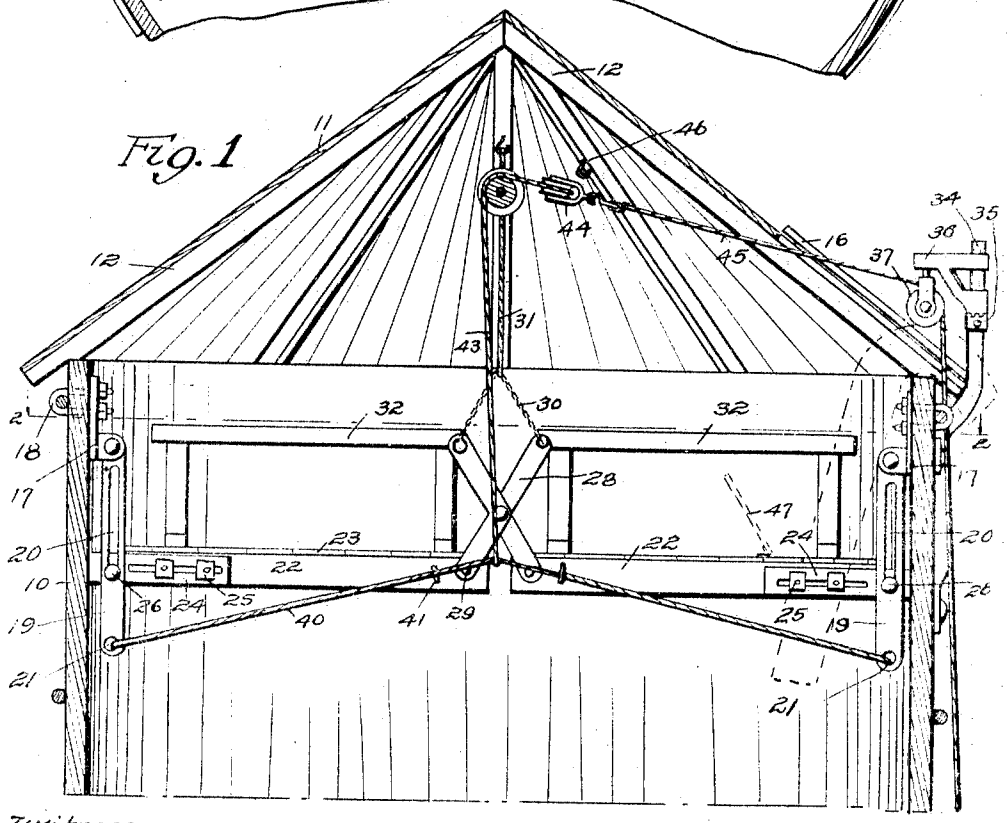


Fig. 1



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2 SHEETS—SHEET 2.

Fig. 3.

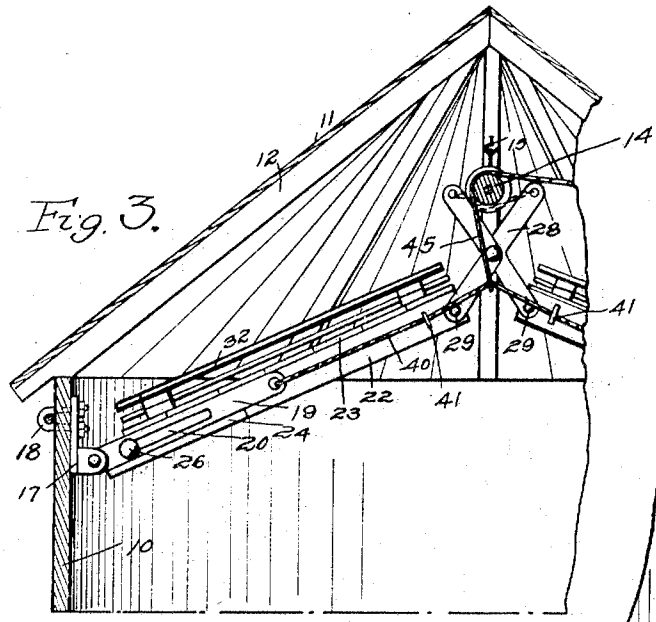


Fig. 4.

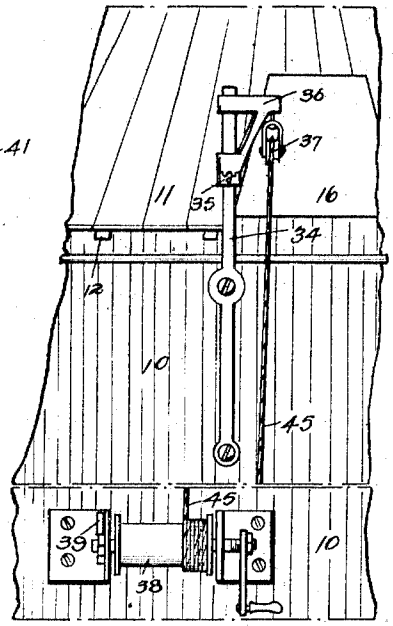
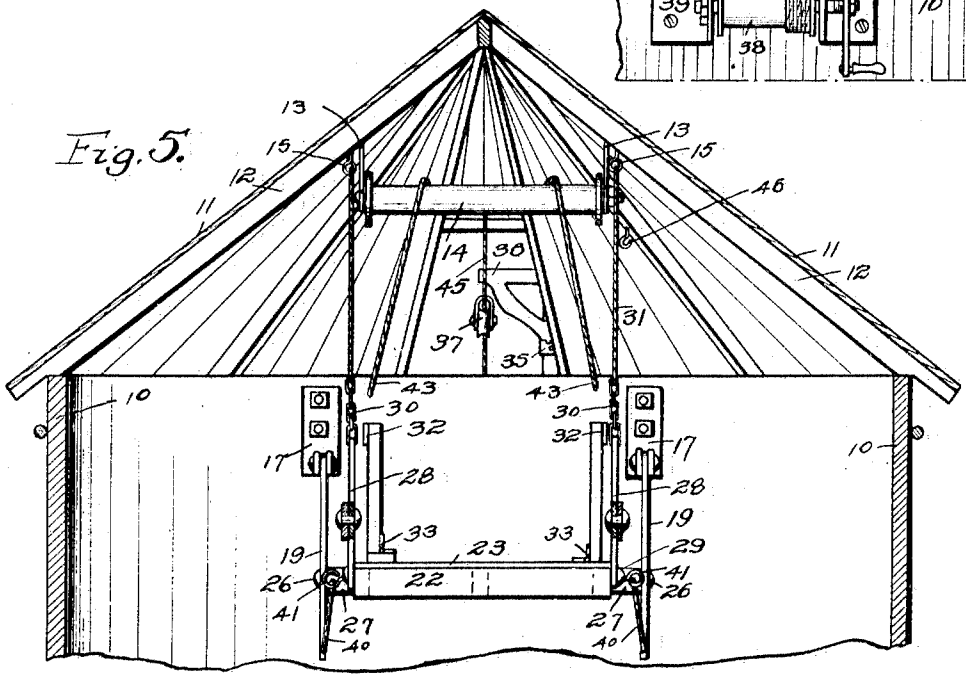


Fig. 5.



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FOLDING SCAFFOLD FOR SILOS.

1,258,402. Specification of Letters Patent. Patented Mar. 5, 1918.

Application filed January 8, 1917. Serial No. 141,170.

To all whom it may concern:

Be it known that I, WILLIAM WAITMAN GARNER, a citizen of the United States, and resident of Des Moines, in the county of Polk and State of Iowa, have invented a certain new and useful Folding Scaffold for Silos, of which the following is a specification.

The object of my invention is to provide a folding scaffold of simple, durable and inexpensive construction.

A further object is to provide a device of the class described, adapted to extend across the upper portion of a silo and adapted when not in use to fold up to a point adjacent to the roof where it will not interfere with the filling of the silo up to the level of the side wall.

A further object is to provide such a device adapted to be dropped to operative position or raised up out of the way while the operator is standing on the ground.

A further object is to provide such a device capable of automatically adjusting itself to irregularities of the surface or shape of the silo wall, and also to provide means adapted to automatically prevent the scaffold from lateral or longitudinal swaying.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Figure 1 shows a side elevation of my scaffold mounted within a silo, parts of the silo being broken away to better illustrate the invention.

Fig. 2 shows a top or plan view of a scaffold installed within a silo, taken on the line 2—2 of Fig. 1.

Fig. 3 shows a side elevation of part of the scaffold in its folded position.

Fig. 4 shows an elevation of a silo, and illustrating the means for operating the scaffold from the ground, and

Fig. 5 shows a transverse, central, sectional view of the scaffold, with the parts shown in full lines where it better illustrates the construction.

I have indicated generally the walls of a silo, by the reference numeral 10, and an ordinary conical roof 11, having rafters 12 supporting it.

Fixed to opposite rafters 12 are brackets 13 supporting a roller 14. Adjacent to each of the brackets 13 are eye-bolts 15.

It will be understood that the silo walls have at one side an opening for emptying the silo which extends from the bottom to the top, and that the roof has a door 16 therein on the side opposite the longitudinal opening in the silo.

At each side of the opening in the wall, brackets 17 are secured by means of U-bolts 18, which extend through the walls and embrace a reinforcing rod such as is usually extended around the silo for supporting the same.

A link 19 is pivoted to each of the brackets 17 at their lower ends and provided with a central, elongated slot 20, and an opening 21 at the lower end thereof. Similar brackets 17 are fixed to the wall 10, at each side of and below the opening 16 and adapted to support similar links 19.

A pair of platform members 22 preferably consisting of longitudinal beams and a flooring 23, are extended across the silo, and have their inner ends adjacent to each other. The outer ends of the supporting beams are provided with plates 24, having therein elongated slots adapted to slidably receive bolts 25. The plates 24 also receive bolts 26, having thereon collars 27 and adapted to be passed through slots 20. A pair of V-shaped levers 28 are pivoted together at the apex of the V, with their end portions extending away from the pivotal point. The lower end of each lever 28 is pivoted at 29 to one of the platforms, and the upper ends are connected together by a suitable flexible device 30. A second flexible device 31 is fastened to the flexible device 30 intermediate of its ends and extended up to the eye-bolt 15, and secured thereto. A similar pair of levers 28 with the same kind of connections are provided at each side of the platforms 22. Guard rails 32 are hinged at 33 to each of the platforms 22, and the hinges of the guard rails of the platform, beneath the opening 16, are so arranged that the guard rails may be easily detached if so desired for a purpose which will hereafter appear.

It will be understood that the hinges 33 are also so arranged that the guard rails may be folded down upon the platform one above the other without interfering.

Fixed to the silo wall at the outside there-

of and adjacent to one side of the openings 16 is an upright 34, having thereon a collar 35, provided with teeth on its upper edge. A crane member 36 is adapted to be slidably received upon the upright 34, and is provided with suitable teeth to coact with the teeth on the collar 35. The crane 36 supports a pulley 37.

Suitably mounted on the outside of the silo wall near the ground is a windlass 38, which is provided with a ratchet and dog mechanism 39, adapted to prevent unwinding of the rope or other flexible device on the windlass. Flexible devices 40 are secured at each end to the opening 21 in links 19, and extend through suitable eyes 41, which are placed adjacent to the inner ends of the platforms 22. A flexible device 43 is fixed to the flexible device 40 intermediate of the eye-bolts 41, and extends up over the roller 14, through the pulley 44, back over the roller 14 and down to a similar flexible device 40, at the other side of the platforms 22.

The pulley 44 has a flexible device 45 detachably secured thereto and extended over the pulley 37 down to the windlass 38 to which the other end is secured.

A hook 46 is secured in one of the rafters 12 adjacent to the roller 14.

It will be understood that this device is intended for use in connection with the installation of a blower pipe, such as has recently come into the general use for the filling of silos.

Whenever a blower pipe has been installed, in the past, it has been the custom to place a ladder against a silo wall and have a man climb the ladder to a point adjacent to the opening 16, and from his precarious perch on the ladder to pull the blower pipe up to said opening, so that the elbow of the pipe might be hooked over the top of the silo wall. It was then necessary for the operator, from a similar precarious position to pull the blower pipe, which is used for distributing the ensilage on the inside, up to the elbow, and extend it through the opening 16 and hook it to the elbow. This process involves a large amount of danger to the man who has to work at the top of the silo pulling up the blower pipe, but it was impossible to use a scaffold of ordinary construction for the operator to stand on, because of the expense of providing a permanent scaffold, and because if such a scaffold were used on the inside of the silo, it would prevent filling the latter up to the top of the silo wall, thereby wasting considerable space.

The applicant has provided a folding scaffold which is adapted to extend from the door in the silo wall, which is always provided, across the top of the silo to the opening in the roof which receives the blower pipe, whereby the operator may stand on a secure platform while he is pulling up the blower pipe.

This enables the operator to work at greater advantage, and at the same time limits the possibilities of accidents on account of the precarious footing, such as is the case where temporary supports are used for the operator to stand on.

In the operation of this device, it will be understood that the flexible device 45 extends through a suitable notch, either in the door 16 or in the roof adjacent thereto, and over the pulley 37 down to the windlass 38.

Assume that the platforms are in the position shown in Fig. 1, and that it is desired to fold up the scaffold, it is only necessary for the operator to stand on the ground and turn the windlass 38 until the flexible devices 43 are pulled over the roller 14 a sufficient distance to raise the platforms 22 to the position shown in Fig. 3.

During the tightening of the flexible devices 43 and 44, it will be understood that the first movement of the platform 22 will be to rest on the inner ends, then as the flexible devices are further tightened, the outer ends will commence to force the bolt 26 upwardly in the slot 20, and when the flexible devices are drawn taut at the end of the movement, the parts will be substantially in the position shown in Fig. 3.

This construction enables the silo to be filled to a point substantially level with the top of the silo, so that no space is wasted by the use of the scaffold.

It will also be understood that when the scaffold is in its horizontal position, the pulley 44 may be unhooked from the flexible device 45, and hooked to the hook 46, whereupon the flexible device 45 may be used for pulling up the sections of the blower pipe from either the inside or outside of the silo by changing the position of the crane 36 with relation to the upright 34.

A trap door 47 is provided in the end of the platform 22 beneath the opening 16, so that the scaffold may be left in position when the blower pipe is installed in the silo.

Some changes may be made in the construction and arrangement of the parts of my improved device without departing from its essential features and purposes, and it is my intention to cover by this application any such changes which may be included within the scope of my claims.

I claim as my invention:

1. In a device of the class described, a pair of spaced walls, a pair of spaced parallel links pivoted at one end to one wall, a similar pair of links similarly pivoted to the other wall and adapted to register with the first pair of links, a pair of platforms having their inner ends disposed adjacent to each other and their outer ends pivotally

supported by the free ends of the respective pairs of links, means for supporting the inner ends of the platform in substantially horizontal alinement with their outer ends, and means for raising the inner ends to position above the first described position.

2. In a device of the class described, a pair of spaced walls, a plurality of links pivoted at one end adjacent to the upper edge of each of the walls, said links having elongated slots adjacent to their free ends, a pair of platforms having their ends pivotally and slidably mounted in said slots, means for supporting the free ends of the platform in substantially horizontal alinement with the lower ends of the slots in the links, and means for raising the platforms and links to a position where the links are substantially parallel to the adjacent platforms, and the platforms are in angular position relative to each other.

3. In a device of the class described, a pair of spaced walls, a support above and between said walls, plurality of links pivoted at one end to each of the walls at points in horizontal alinement, said links having elongated slots therein adjacent to their free ends, a pair of platforms having one end pivotally and slidably mounted in the slots in the links, means for supporting the free ends of the platforms, in substantially horizontal alinement with the lower ends of the slots in the links, a plurality of flexible devices having one end fixed to the lower ends of the links and their intermediate portions slidably received respectively in the free ends of the platforms and the support, and means for shortening the flexible devices between the support and the links.

4. In a device of the class described, a pair of spaced walls, a support above and between said walls, a movable platform extended between said walls, comprising two abutting sections, means for supporting the outer ends of the sections adapted to permit longitudinal movement thereof, and a pair of angular brackets having one end pivoted to the inner ends of the sections, and the apexes of the angles pivoted together, a flexible device extended between the upper ends of the brackets, and a supporting means fixed at the upper end to said support and at the other end to the flexible device intermediate of its ends.

5. In a folding silo scaffold, a folding platform adapted to be extended between the walls of a silo, said platform being spaced downwardly from the upper edge of the walls, means for folding said platform up to position substantially within the lines of the roof, said means being capable of being operated from the ground.

6. The combination of two scaffold platform members in line with each other, means for connecting them at their adjacent ends whereby they may fold upwardly, and means at their outer ends for slidingly and pivotally securing them to a stationary support, whereby an upward pull upon the adjacent ends of the platform members will cause them to fold upwardly and also to move bodily upwardly a their outer ends.

7. The combination of two scaffold platform members in line with each other, means for connecting them at their adjacent ends whereby they may fold upwardly, and means at their outer ends for slidably and pivotally securing them to a stationary support, whereby an upward pull upon the adjacent ends of the platform members will cause them to fold upwardly and also to move bodily upwardly at their outer ends, and means for adjustably suspending the adjacent ends of the platform members.

8. In a device of the class described, a circular silo wall, a roof thereabove, a movable platform extended between said walls below their upper edges and comprising two abutting sections, means for supporting the outer ends of said sections in position below the upper edge of the wall, means for adjusting the length of each section, and means for supporting the inner ends of the platform in substantial alinement with the outer ends, said last described means being adapted to yieldingly spread the inner ends of the sections, whereby the outer ends of the scaffold may abut against the circular inner surface of the silo to prevent lateral movement of the scaffold relative to the wall.

Des Moines, Iowa, December 29, 1916.

WILLIAM WAITMAN GARNER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."