## DIRECTIONS FOR ERECTING No. 1 IDEAL STEEL TOWER—3 AND 4 POST.

HE No. 1 Ideal Steel towers, both 3 and 4 post, are made in sections. Each section is 10 feet in length. Two sections (Nos. 1 and 2) constitute a 20-foot tower; three sections (Nos. 1, 2 and 3) constitute a 30-foot tower; four sections (Nos. 1, 2, 3 and 4) constitute a 40-foot tower, and so on; ten sections (Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10) constitute a 100-foot tower.

The sections are numbered from the top of the tower downward. The top section is called No. 1, the next No. 2 and so on down to section 10, which is the bottom one in a hundred-foot tower.

Each section is composed of corner posts, girts, braces, bolts, eccentric washers, guide rods, clamps, etc.

Corner Posts. In the first (top) section the corner posts are 9 feet and 3 inches long, and in all other sections are 10 feet and 6 inches long.

Splicing Corner Posts Together. The bottom end of post in one section splices against top end of post in section below. To distinguish the top end of post from the bottom end—first, in first (top) section the upper end contains only two holes and the lower end contains four holes, two in corner and one on each side. The top end of posts in all other sections contains four holes, two in corner and one on each side, while the bottom end contains five holes, three in corner and one on each side.

Bolts in Splice. Four bolts are used in making splice, two in corner and one on each side, but at anchor post splice five bolts are used.

The bottom end of corner post laps outside Make no mistake in this—in splicing corner posts.

To Put Tower Together. Arrange to put tower together at the identical place for raising. The ground should be level or else blocking will be required for keeping the corner posts forming side of tower lying on the ground level.

Bolts and Fixtures. Open box marked 1 and 2, 3-P., if for a 3-post tower, or box marked 1 and 2, 4-P., if for a 4-post tower, and separate bolts into lots of the same length and size; every size and length of bolt belongs to a particular place in the tower. It will be found that all bolts fit holes exactly when put where they belong and are just long enough to take one nut, except the bolts that fasten tower cap in place, where the bolts take two nuts, one of which is for locking the other.

How to Begin. 1st. Lay out a sufficient number of corner posts to form two complete corners. Splice by bolting together and observe that lower end of post should lap outside and not inside. Fasten tower cap to top end of posts and carefully spread the bottom ends the proper distance apart. Then select longest set of girts, one of which should now be laid in its place at foot of tower posts and the remaining girts of this set should be put aside for using when fixing the other sides of the tower. Next proceed to arrange the remaining girts in place in similar manner until all of the girts belonging to one side of the tower are at their place, remembering that the longest set of girts go at foot of tower; the shortest at the top. Now arrange the wire cable braces by selecting a pair of the very longest set to go at the foot of the tower and set aside the remaining pairs of this set for fixing the remaining sides of the tower. Proceed to place one pair of wire cable braces

from each of the remaining sets in place—the longest set belongs at foot of tower and the shortest set at top. Commence at top of tower to fasten girts and braces in place.

- 2d. Girts. The shortest set of girts (found in the box with bolts and fixtures) goes at first set of holes in the sides of post below tower cap, and must be bolted on the outside of post (all other sets of girts belong on inside of corner posts). The second set of girts belongs at the second set of holes in sides of posts below top cap.
- 3d. Braces. The shortest set of braces begins at the second set of girts. Observe that the braces have a loop at each end—one large and the other small—the end having small loop goes up. It is to be observed that girts of the second set, as well as all girts from the second set down, go on the inside of the corner posts, with flat sides against the post and with the flange up. The upper end of the wire cable braces also belongs on the inside of the corner posts, but not between the girt and post, but inside of both post and girt.

In fastening girt and upper end of wire cable brace in place, observe that the bolt must have a steel washer, which prevents bolt head from slipping through the loop of the cable brace. Pass the bolt through loop of brace and then through hole in end of girt and then through hole in corner post of tower and put mut on bolt. The end of each girt and each wire cable brace in this set is to be fixed in like manner. Proceed to finish one side of the tower from top to base before beginning on either of the other sides.

- 4th. The third set of girts in towers for 6, 8, 9, 10 and 12 foot mills belongs at fourth hole in side of corner post below tower cap, but for 14 and 16 foot mills belongs in third set of holes below tower cap inside of post. Remember, that no wire cable braces fasten at this set of girts. Observe that this set of girts fasten to inside of corner posts in the same manner as the set above, as do all girts below.
- 5th. The fourth set of girts in towers for 6, 8, 9 and 10 foot mills belongs at fifth hole in side of post below tower cap, and in towers for 12 foot mill in fourth hole, and for 14 and 16 foot mills in fifth hole.
- 6th. The fifth set of girts in towers for 6, 8, 9 and 10 foot mills belongs at sixth set of holes in side of posts below tower cap. Towers for 12, 14 and 16 foot mills do not have the fifth girt in first (top) section. The fifth girt in towers for 6, 8, 9 and 10 foot mills and fourth girt in towers for 12, 14 and 16 foot mills comes just above first splice in corner posts. It is at this girt that the lower end of the first set of cable braces attaches and where the upper end of the second set of cable braces begins.
- 7th. Eccentric Washer. In fixing the girt just above first splice in corner posts select the bolt for the place and pass a steel washer over bolt up against the head; now pass bolt through loop in upper end of the next shortest wire cable brace (small loop of brace is at upper end, large loop always goes down), then through hole in end of girt (flat side of girt against tower post with flange up) and on inside of tower post, then pass bolt on through hole in corner post of tower and then through loop of the lower end of wire cable brace above, which is attached at top to the opposite corner post, and put eccentric washer in place on the bolt and have thin side of eccentric (a V point on outside of washer indicates the thin side) down and put on nut and draw up moderately tight—just tight enough to hold girt

and cable braces in place. Now fix the other end of this girt and its cable braces in exactly the same manner.

8th. The next girt belongs in the middle of the next lower (second) section of the tower. Fix girt and wire cable braces of this set exactly as directed for the set above (see 7th). Proceed in like manner to fix girt and braces in the next set (that attach just above splice at bottom of the second section of the tower). Next proceed to arrange girt and next shortest set of wire cable braces at middle of the third section of the tower, as already directed, but observe that there is no wire cable brace to attach on the outside of post at this girt as is the case at the girts above and the ones below. Proceed to fix the remaining set of girts and wire cable braces as already directed until one side of the tower is finished.

oth. Towers 30 feet and higher. Observe that wire cable braces in section three are long enough to reach from girt just above splice of corner post at base of section two of tower to girt just above splice of corner post at base of section three.

noth. Only one set of wire cable braces are furnished for the last or bottom section of towers.

11th. Towers 4c feet and higher. Observe that the wire cable braces, the upper end of which attaches at girt in the middle of the third section (25 feet from top) of tower, is long enough to reach down and attach at girt in the middle of the section below.

12th. Clamps. Every long wire cable brace is to be fastened in the middle to the girt with a clamp which is bolted to girt—two holes will be found in each girt at place where wire cable braces cross. Do not put clamps on until tower is all put together.

Having put one side of tower together, then

13th. To proceed—3-post tower. Begin at top of tower and fix first (top) section of corner post in place by bolting to tower cap (by temporarily fixing the girts that belong just above the first splice in corner post; the first section of the corner post is easily held in place while bolting to tower cap). Next fix all girts and braces on both sides of this section of the tower, in the same manner as directed for fixing same on the side of tower just finished. Proceed to splice on the next section of corner post and then to fix girts and braces on both sides of this section as directed for fixing same on the side already finished, and continue to splice on the next section of corner post and fix girts and braces in same manner until all is finished. Proceed in like manner with each remaining section until all is finished.

as directed for putting the 3-post tower. Put one side of the tower together, exactly as directed for putting the 3-post tower together, then begin at top of tower and fix the first (top) section of corner posts in place by bolting the two corner posts to tower cap (by temporarily fixing the girts that belong just above first splice in corner post; the first section of the corner posts is easily held in place by bolting to tower cap). Next fix all girts and wire cable braces on all three sides of this section of the tower in the same manner as directed for fixing girts and braces on the side already finished. Proceed to splice on the corner posts for the next section and to fix girts and wire cable braces on all three sides of this section, as directed for fixing same on the side already finished, and continue to splice on the next section of corner posts and to fix girts and wire cable braces on all three sides of this section in same manner until all is finished. Proceed in like manner with each remaining section until all is finished.

15th. Adjustment of wire cable braces by means of eccentric washers. One eccentric cast washer is furnished for each wire brace to go on outside of corner post, and is used for tightening braces by turning to the left. The washer is held in place by tightening nut on bolt. When all the braces and girts are in place, begin at the top of tower and tighten the wire braces by turning the cast eccentric washers in each section equally to the left until braces are just taut and no more, and one equally as taut as the other, then draw the nut tight to prevent slipping.

CAUTION.—In adjusting the braces it should be borne in mind that too much tension will cause the girts or corner posts to spring out of line and thus weaken the tower. Do not put the clamps that fasten the wire braces to girts in place until the adjustment of braces is complete.

16th. Clamps are provided to fasten braces to the girts (commencing at the middle of section three, or 25 feet from top), for the purpose of strengthening the girts and prevent them springing up or down, in or out. In fastening the clamps be sure the girts are straight. Two clamps are used on each girt near the center, and bolt holes are arranged accordingly. On the ladder side the clamps go between the girt and ladder and are held by the same bolts that fasten the ladder to the tower.

17th Adjustable mast support. For 6, 8, 9, 12 and 14 foot Ideal mills, and for 6, 8, 9 and 10 foot Samson mills, the mast support is fixed at first set of holes in corner of the tower posts below the tower cap. For 10 and 16 foot Ideal and 16 foot Samson mills the mast support is to be fixed at the second set of holes in corner of the tower posts below tower cap.

18th. Platform. Slip platform over the top of tower with the opening on the ladder side and bolt it in place. In 3-post tower two iron braces attach to under side of platform near the edge by means of bolts. The other end bolts to corner post of tower.

right. Ladder. The tower is arranged to place the ladder upon either side. The brace clamps go between the ladder and girt and are held with the same bolts that fasten the ladder in place. The bottom end of ladder and girt to which it is bolted should be supported by suitable posts set in the ground. The ladder is the last thing to go on.

20th. The pull-out wire must pass from guide at platform (see instructions for erecting mill) down between the arms of swinging guide rods, that guide pump rod, and the corner post of the tower. In attaching pull-out wire to pull-out reel, unwind all the chain from reel and draw pull-out wire down taut, but not taut enough to begin turning mill out of the wind, and then pass the end of pull-out wire through link at end of reel chain and draw both chain and wire taut, but not taut enough to begin turning mill out of the wind, and firmly secure wire to last link of chain. Care should be had in adjusting the length of pull-out wire that there will be about two inches of slack when mill is thrown into the wind and in turning mill full out that the wire does not wind up on the reel.

21st. Anchor posts. Do not attach anchor posts until the tower has been raised and put in place and plumbed. (See instructions for attaching anchor posts).

22d. Raising. A steel tower is different from one made of wood, and care should be exercised that the two lower posts do not buckle while raising. In 50foot towers and higher it will be well to lash a 4x4 16 foot long to the outside of

each of the two lower posts, which will greatly stiffen them; also lash a piece of 4x4 in the corner of the two side bottom girts to keep same from buckling while raising. The use of a shear is recommended for raising towers; it not only facilitutes the work, but lessens the risk. A shear should be at least two feet longer than one-half the height of the tower in every case and placed at the foot of tower, resting on the ground, the upper end of shear leaning well toward the top of tower.

23d. To connect pump-rod guides. There is furnished and shipped with each 30-foot tower for 6, 8, 9, 10 and 12 foot Ideal mills of the regular pattern, and for 6, 8, 9 and 10 foot Samson mills, one swinging pump-rod guide, and for higher towers an additional one for each additional ten feet of tower. The swinging guiderod for 30-foot towers for 6, 8, 9, 10 and 12 foot regular mills, except 12-foot Samson, goes on the fifth set of girts below top of tower. For towers more than 80-foot the top guide goes on fifth set of girts and next guide on seventh set of girts, and so on down every alternate set of girts. Turn the wheel so the pump-rod is half way up for making stroke and bore 16-inch hole through the rod on a level with girts, to which the rods connect, for the guide-rod clamp. The swinging pump-rod guides are secured at each end with clamps, one end of which is fastened to the girts near corner post and the other on the side of pump-rod opposite the fastening at girt. See that the adjustment leaves the rod straight. For fixing stationary guide at platform see instructions for erecting windmills, which are sent with the mill.

12, 14 and 16 foot Ideal Irrigator Windmills and 12 and 16 foot Samson Mills. In addition to swinging guides there is furnished one stationary guide for the 12foot mills and two stationary guides for the 14 and 16-foot mills. The stationary guide for the 12-foot mill and the upper stationary guide for the 14 and 16-foot mills fasten on top of the fifth set of girts below top of tower, and the lower (longest) stationary guide for the 14 and 16-foot mills goes on top of the seventh set of girts, and swinging pump-rod guides are furnished for each additional ten feet of tower.

24th. Support for lower girt. As the lower girt is near the ground and is liable to be walked on we have arranged to support it with a wire brace from the girt above near the center. If, however, it is necessary to use the pump by hand and this brace interferes with entering the tower, it may be left off by using a post set in the ground sufficient to support the girt at the center from below.

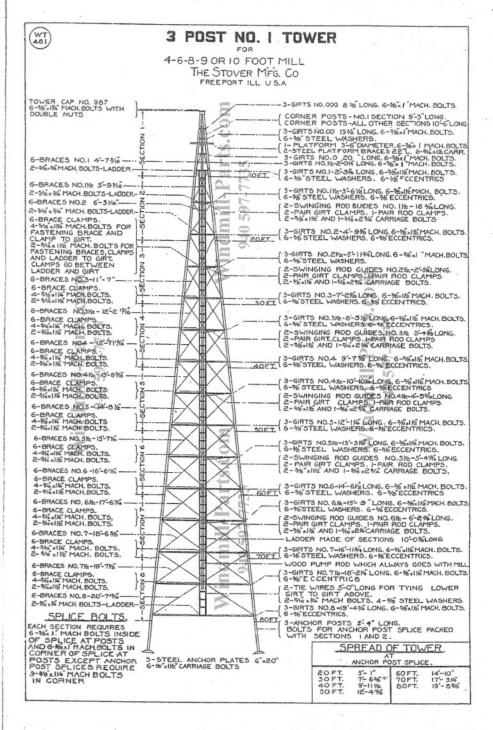
25th. How to secure anchor posts. Good anchorage is most essential, for upon it depends the security of mill and tower. To properly secure steel anchors in the

ground it is necessary to adopt one of the following methods:

The holes having been dug deep enough to bring the lower girt flat upon the ground and large enough to admit the anchor plates, the tower being erected and accurately plumbed, now attach anchor posts and proceed to fill up the holes, tamping the earth solid as it is thrown in. If the earth at bottom of hole is loose, either put in plank or broken rock and cement to give a solid foundation. Rock, plank or boards on top of anchor plates will be found most excellent to prevent anchors from pulling.

Near the top of ground something besides dirt must be used about the anchor post. A large rock—no less than twelve inches in diameter—or a short piece of plank should be placed against the inside of post below the surface to keep the post from moving toward the center of tower; or the upper part of holes for two feet deep can be filled with cobble stone or small broken rock well tamped about the inside of anchor post, which will also answer the purpose. There is so little surface to a steel anchor post that it is necessary to supply extra surface with other material of a suitable character.

N. B.—Always carry a taper punch or drift to drift out holes at splices where they do not exactly meet. By so doing it will be an easy matter to enter the bolts.



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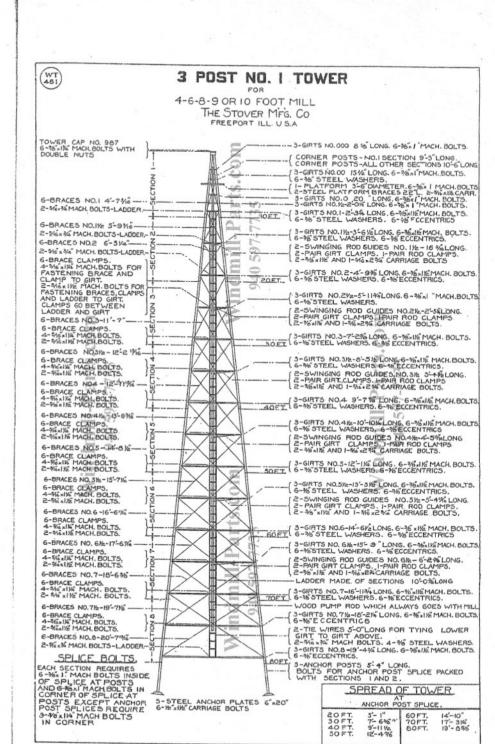
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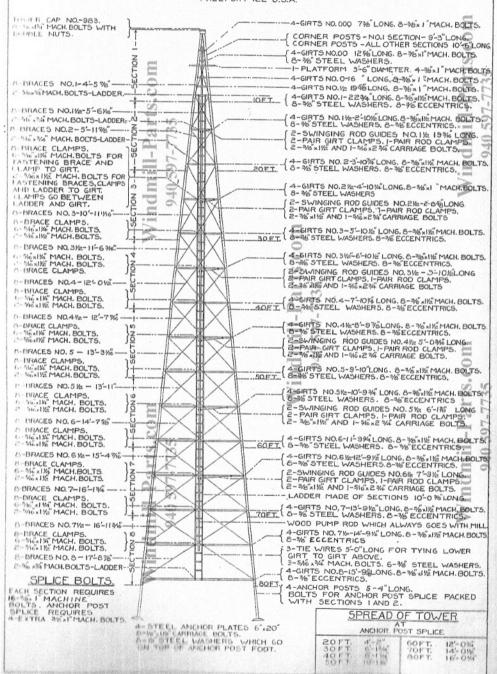
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## (AYD)

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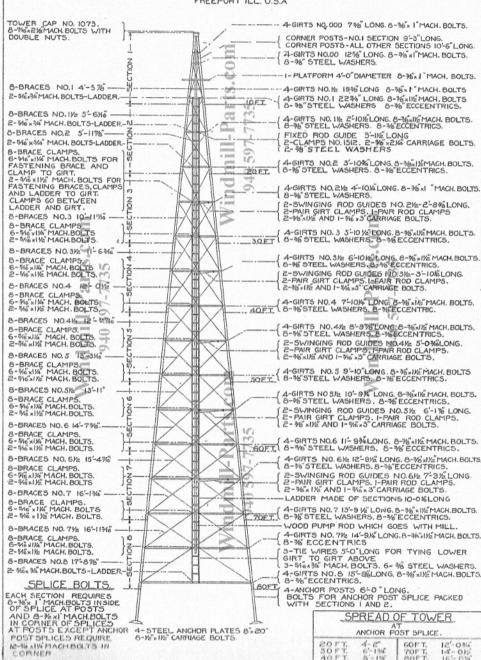
4-6-8-9 OR 10 FOOT MILL THE STOVER MEG CO FREEPORT ILL U.S.A.





## 4 POST NO. I TOWER

12 FOOT MILL THE STOVER MEG. CO. FREEPORT ILL. U.S.A.



12'-0%

14 - 0½ 16 - 0%

70FT.