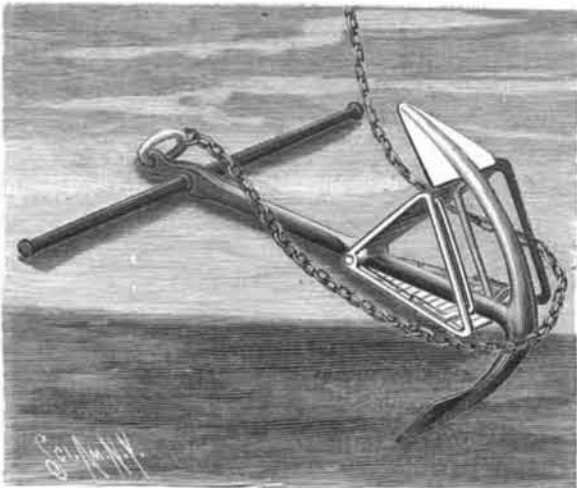


**A SAFETY ATTACHMENT FOR ANCHORS.**

A device capable of ready attachment to an ordinary anchor, whereby when the anchor is fixed in the bottom it cannot be detached by entanglement with the cable, while the anchor may be catheaded in the usual manner without inconvenience, has been patented by Capt. Nelson Smith, and is illustrated herewith. The invention consists in pivoting a triangular frame to the shank of the anchor between the flukes, the frame being so made that it will guide the cable clear of the non-embedded fluke without regard to the position of the ship, the bars forming the base of the frame having a rounding surface, and extending at such distance downward as to be under all conditions below the plane of the under side of the flukes. The inventor has had this attachment in practical use for a year, and it is found to work satisfactorily. For further particulars



**SMITH'S SAFETY ATTACHMENT FOR ANCHORS.**

with reference to this invention address Capt. Nelson Smith, care of Mr. L. Heine, Bellmore, Queens County, N. Y.

**AN IMPROVED STACKER.**

A simple and effective apparatus for stacking hay or grain in the field, and one easily moved about and set up in place, has been patented by M. A. Heinlen, of San Jose, Cal., and is illustrated herewith, being shown as set up for use and in a closed or folded position. A suitably constructed derrick is provided in connection with a truck, and to erect the derrick, guy ropes, attached to a plate on top of the derrick post, are fastened to stakes driven in the ground, and the truck is moved slightly forward. The derrick frame is raised or lowered as desired by a windlass, the derrick arm being also moved into a horizontal or inclined position by another windlass, both of which are mounted near the lower end of the derrick post. The fork rope passes over pulleys on the derrick arm and post, and thence over a pulley hung on a link supported by arms secured to



**HEINLEN'S STACKER.**

the truck frame, and by a link adapted to be secured to stakes driven into the ground under the truck. The team used for pulling the machine is then attached to the lower end of the fork rope, a fork of any approved construction being secured to the outer end of the rope, when the fork and rope are manipulated in the usual manner.

**Failure of Bolt-up Guns.**

No less than ten of the large 9 1/2 guns made for the British government have recently failed at test, the inner tubes of nine having been split and the outer casing of the other fractured. This, we believe, is the style of gun that has of late been so urgently advocated by certain of our army and naval officers as necessary for adoption in this country, to the exclusion of all other kinds of ordnance. In the opinion of these wise men, all people who hinted at anything else were behind the age.

**Bronze Tests.**

There have been completed at the Watertown Arsenal some interesting tests of alloys, which the government had ordered, with a view to getting the best possible material for the screws for the fifteen or twenty new war ships now building. The results are as follows:

**ALUMINUM BRONZE AND BRASS.**

Bronze Composition.	Pounds Elastic Limit.	Per Cent Elongation.	Pounds Tensile Strength Per Square Inch.
Copper and 8 per cent Al and Si.....	19,000	23.7	58,500
Copper and 10 per cent Al and Si.....	33,000	3.2	68,000
Copper and 8 1/2 per cent Al and Si.....	18,000	26.0	61,000
Copper and 7 1/2 per cent Al and Si.....	19,000	9.3	52,000
Copper and 7 per cent Al and Si.....	17,000	11.9	46,000
Copper and 8 1/4 per cent Al and Si.....	24,000	13.3	66,500
Copper and 9 per cent Al and Si.....	28,000	4.5	66,000
Copper and 10 1/4 per cent Al and Si.....	33,000	3.6	72,500
<b>Brass Composition.</b>			
Copper and 3 1/4 Al, 33 1/4 per cent Zn.....	55,000	1.6	70,000
Copper and 3 1/2 Al, 33 1/2 per cent Zn.....	65,000	2.5	82,500

**GOVERNMENT GUN BRONZE.**

	Elastic Limit.	Per Cent Elongation.	Pounds Tensile Strength Per Square Inch.
Copper 88, tin 10, zinc 2, per cent.....	9,000	1.5	18,000
Copper 88, tin 10, zinc 2, per cent.....	10,000	2.0	18,000
Copper 88, tin 10, zinc 2, per cent.....	13,000	3.0	20,000
Copper 88, tin 10, zinc 2, per cent.....	11,000	5.0	22,500
Copper 88, tin 10, zinc 2, per cent.....	13,000	1.5	23,000
Copper 88, tin 10, zinc 2, per cent.....	10,000	3.5	19,000

All bars were 22 inches in length by 1 1/2 inches in diameter, and 10 inches or 15 inches between elongation marks. The government gun bronze was made at the navy yard, and is the material that has been used universally in both the army and navy departments in the construction of all bronze cannon, propeller wheels, gun carriages, etc., for the past fifty years. The above tests were made at the Watertown U. S. Arsenal, Watertown, Mass., under the auspices of the United States Navy Department, during the week ending December 13, 1887.—*Jour. Franklin Institute.*

**Secrets of the Brandy Industry.**

In a recent report from Mr. Vice-Consul Warburton, some suggestive statements are made as to the condition of the brandy industry in the department of the Charente-Inferieure, from which, before the vine failure, a considerable portion of the brandy exported to this country (England) was derived, although much also came through Cognac, which is the headquarters of the trade. Mr. Warburton states that in 1875 the department produced 200,000,000 gallons of wine, a great part of the surplus over the local consumption being converted into brandy. In consequence, however, of the ravages of the phylloxera the produce has gradually fallen off, until in 1886 it was reduced to 13,000,000 gallons. As the local consumption of wine in the department is estimated at 12,000,000 gals., it will be seen there must have been comparatively little left for brandy making. In fact, Mr. Warburton says that pure brandy has become very scarce and difficult to get in the department, most of what is sold being mixed with beet root or cheap German spirit, while the latter is very often sold as cognac without any mixture at all. Mr. Warburton significantly adds that the supply of "cognac" is very limited and must diminish every year, so that if the trade in the reputed article continues to go on much the same as it did before the failure of the vines, it will be evident that fraud is on the increase.—*Pharmaceut. Journal.*

**AN IMPROVED LAWN MOWER.**

A lawn mower made with a finger bar and a cutter bar reciprocating in the guard fingers of the finger bar, similar to an ordinary mowing machine, has been patented by Mr. John F. Watermolen, of Green Bay, Wis. The main frame of the machine has front side pieces carrying a finger bar in front of the drive wheels, and bolted to a plate on one of the side pieces is a casing or housing inclosing gearing and a shaft for transmitting motion from a sleeve projecting from a clutch block on the axle to a shaft which reciprocates the cutter bar. This clutch block has a spring-actuated dog to engage with notches of the drive wheel for locking the wheel to the clutch block on the forward movement of the machine, and disconnecting it on its backward movement, and the clutch blocks near each wheel on the axle are connected together by an intermediate clutch tube, so that the power of both drive wheels, when the machine is moved forward, will be exerted to give a reciprocating motion to the cutter bar. The connections of the side frames of the machine are such that they cannot be rocked upon the axle without lifting or lowering the cutter bar.

**AN IMPROVED STEP LADDER.**

A step ladder in which the two hinged main limbs are made capable of simultaneous expansion and contraction has been patented by Mr. Alfred M. Whiteley, of Atlanta, Ga., and is illustrated herewith. Both the

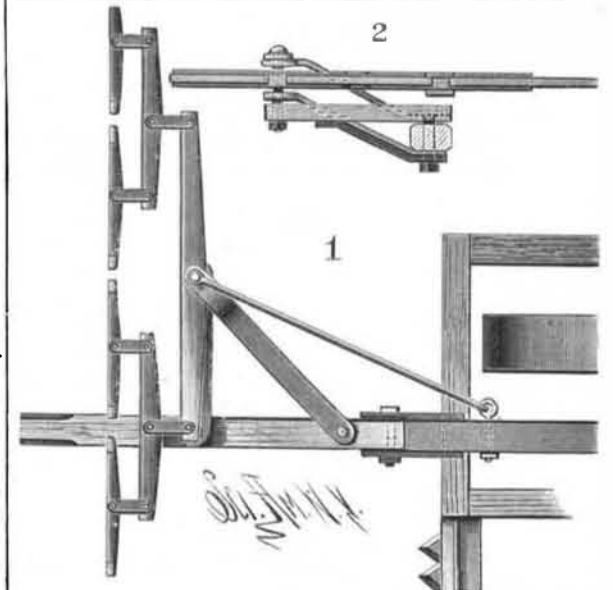


**WHITELEY'S STEP LADDER**

step portion and the leg portion, instead of resting at their lower ends upon the ground, are fitted to be capable of sliding up and down within outer separate frame portions, thus providing for the bodily extension of the ladder at its front and back, the step section having a sliding rod and eye connection with one independent supporting frame, while the leg section has a sliding strap-like brace connection with another independent supporting frame. This construction gives great facility of raising or lowering the ladder, and of locking or holding it at different heights.

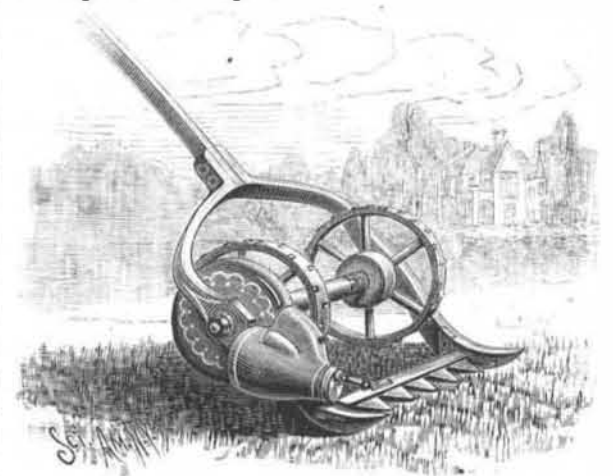
**AN IMPROVED DRAUGHT EQUALIZER.**

A draught equalizer, more especially adapted for mowers and reapers requiring four draught animals, and so arranged that one animal is on the inside of the



**FELL'S DRAUGHT EQUALIZER.**

pole while three are on the outside, is illustrated herewith, and has been patented by Mr. Michael Fell, of Everly, Iowa. A bracket is attached by a bolt to the pole, and extends at right angles thereto, a brace being secured by one end to the under side of the bracket, and held at the other end on the bolt, as shown in the sectional view, Fig. 2. From the outer end of the bracket a brace extends rearwardly, and is secured to a bolt held on the pole, while a rod held by one end on the outer end of the bracket is pivoted or swiveled at its other end on a bolt secured to the draught beam, or to any other suitable part of the machine. This arrangement permits of an upward swinging motion of the pole with the equalizing attachment, and assures the equal draught of the four animals on the machine, avoiding all side draught.



**WATERMOLEN'S LAWN MOWER.**