

**ELECTRO-MAGNETIC BURGLAR ALARM SAFE.**

This invention, which is shown in the accompanying engraving, consists in a certain construction and arrangement of safes in connection with magnetic or electric wires, a battery and an alarm apparatus, by which the drilling, forcible breaking or opening as well as removal of safes is prevented.

The safe is constructed in such a way that it is impossible to tamper with it without it gives an alarm, either by drilling, forcible breaking, insertion of key, or by turning the knob of a combination lock, through which the outer wall of the safe is connected with an inner insulating plate running on all sides and door thereof, or by moving the safe, which stands on plates inserted in the floor; the safe being moved from it will break the circuit of the current, connected with a relay, provided with an anchor, which will fall off, giving an alarm, as soon as the safe is moved, the same being the case if the wires should be cut connecting with the safe. The alarm thus brought into motion will keep on ringing until released, the alarm being provided with circuit breakers, which may be put to rest during the day. The alarm apparatus can be placed in any suitable place about the house, police station, night watchman's room, etc. The safe does not differ in appearance from any other. We are informed that this alarm can also be affixed to old safes.

The wires, which for convenience in the present case are connected with the front of the safe, will, in practice, be connected with the back, where they will be out of the way and out of sight.

This invention was recently patented by Mr. Max Koloseus, 123 East Houston street, New York, from whom further particulars may be obtained.

**The Beet.**

The original stock of the beet occurs wild on the shores of the Mediterranean Sea, in Greece, and grows wild in some of the islands of the Atlantic Ocean. This is the common mangold, of which there are two subspecies. It was cultivated for food by the Greeks, as it is at the present day by the Persians and natives of India. The Romans were acquainted with two varieties. Charlemagne ordered the cultivation of the beet on his estate, and from this it was distributed throughout Europe, and has extended to North America.

**NEW CORN PLOW AND MARKER.**

Our engraving represents an implement by means of which land can be laid off in squares for corn planting, and it may readily be converted into a plow for cultivating the corn after it has attained sufficient height.

The axle is made of one continuous piece of steel or iron, and is bent forward at its center to receive the tongue and the supports of the middle marking wheel. The spindles of the axle are made much longer than usual to permit of moving the wheels outward toward the ends of the axle.

An iron bar, A, is secured to the axle, and has in it two holes for receiving the rods that project rearwardly from the seat, B. This seat is made adjustable so that it may be moved back and forth, so that the driver can adjust his weight to the machine, and thus balance it so that there will be no weight on the necks of the horses.

A number of hook bolts, C, pass through the axle for receiving the ends of the beams, D, and supporting rod, E. When the implement is used for marking, the outer wheels are placed at the ends of the axle, and the wheel, F, shown in Fig. 2 of the engraving, is attached to the axle by means of the middle pair of hook bolts. The wheel, F, is free to move up or down, by this arrangement each wheel will mark the ground distinctly, no matter how rough or uneven it may be. The implement is converted into a corn plow by removing the wheel, F, and moving the wheels from the ends of the axle inward against the shoulders of the axle, and a double plow is attached to each end of the axle and one is attached to the middle.

The supporting rod, E, extends under all of the plow beams and prevents the plows from entering too deeply into the ground. A lever, G, is connected with the supporting rod, E, for raising and lowering the plow beams, and to

each pair of plow beams a strap or chain is attached, by means of which the driver may raise any pair of plows should it become necessary. When it is desired to increase the distance between the plows a wooden block may be inserted between the beams of each pair at a point where they are bent inward and joined together. For further particulars address the inventor, Mr. Charles M. Burns, Hamler, Ohio.

**New Miscellaneous Inventions.**

Mr. Jerome D. Bruce, of Newberry, S. C., has patented an improved Bale Tie, the buckle of which is constructed

Mr. James W. Sheetz, of Woodstock, Va., has patented an improved combined Washer and Wringer, by which the clothes may be cleaned in a superior manner, as the machine admits the effective cleansing of the dirtier parts without rubbing the cleaner ones. The clothes, after being cleaned, are also wrung out.

Mr. James H. Hawes, of Monroeton, Penn., has patented an improved Toy Box. The object of this invention is to furnish a toy box into which may be packed any desired articles or toys for children.

An improved Scarf Fastening has been patented by Mr. Henry Sandner, of Hoboken, N. J. It is intended to furnish for scarfs of all kinds an improved fastening device, through which one end of the neck-band may be readily passed, and then firmly retained when in proper position.

Messrs. John M. Taylor and John Mackay, of Fredericton, New Brunswick, Canada, have patented an improved Rein Holding Attachment for Harnesses, which is constructed so as to receive and support the reins should they be slacked by the driver, and to hold them should they be laid down for a few minutes by the driver, so that they will not catch upon other parts of the harness.

Mr. James B. Brown, of Suisun City, California, has patented an improved Book Holder, for holding music in position on the rack of a piano, organ, or other instrument. It is readily applied to the sheets or book of music, and lifted therefrom to admit of turning, being also applicable for the purpose of holding a book or papers in open position on the desk or rest, for reading, writing, etc.

An improved Coffee Pot has been patented by Mr. Armstrong B. Place, of Denver, Col. This invention consists in a novel construction of a vessel for holding the ground coffee and straining the liquid. It may be used in connection with a pot or boiler of any suitable description; but its efficiency is enhanced when used in a vessel to which it is adapted.

Messrs. Frederick A. Copeland and Robert W. Taylor, of La Crosse, Wis., have patented an improved Fire Escape, of that class in which a carriage or traveling frame is sustained upon a rail fixed near the roof of the building. The chief features of novelty consist in means for propelling the carriage (from below) to a position upon the rail in front of any particular window or door, and in means for regulating and rendering uniform the descent of persons on an endless rope depending from the carriage, an automatic governor and separate friction brake being employed for this purpose.

Mr. Samuel P. Halleck, of Oriskany, N. Y., has patented an improved Feed Gauge, by which the pin holes in the blanket are done away with, and the end and side gauges readily adjusted to the paper to be printed on the press.

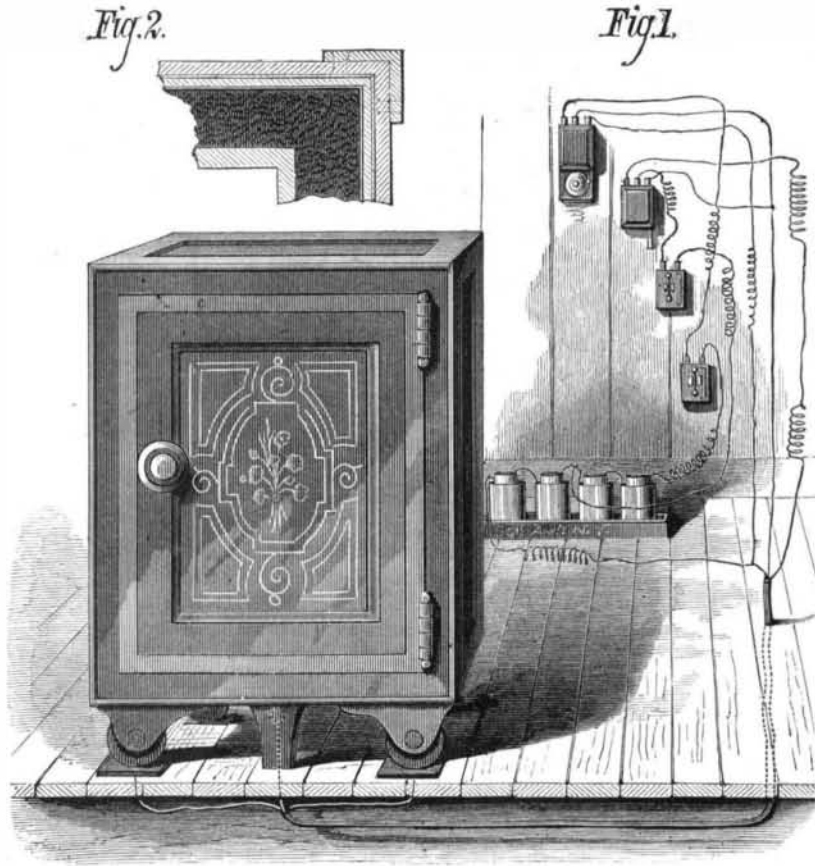
Mr. Ansel D. Jones, of Kirksville, Ky., has invented an improved Riding Saddle, which is formed in two separate parts, the seat piece being secured detachably to the bow and bars by bolts. The principal advantage gained is great economy of labor and material in construction.

An improved Leather Whip has been patented by Edward B. Light, of Denver, Col. The object of this invention is to furnish an improved leather whip of perfect taper and bend, and of such elasticity and cheapness as to be durable and very serviceable.

Christoph Weeke, of St. Charles, Mo., is the inventor of an improved Heater that is to be used in connection with a stove for the purpose of heating the same room by the heat that would otherwise pass off through the chimney, or for the purpose of heating upper rooms, the entire heater being either set entirely into the wall or partly into the wall and partly projecting into the room.

Perceval Moses Parsons, of Melbourne House, Black Heath, Kent county, England, has patented an improvement in the Manufacture of Copper Alloys containing manganese, which consists in adding to the copper alloys a proportion of spiegeleisen, ferro-manganese, or other carburet of iron combined with a sufficient quantity of manganese.

Mr. John Prosser, of Ottumwa, Iowa, has patented an improved process for Extracting Metals from their Ores, which consists in combining the ores (containing gold, silver, and copper) with a flux composed of sulphate of iron, salt, black oxide of manganese, and saltpeter, then



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with a rounded pintle at one end, and with flat opposing faces, which constitute a longitudinal channel through the buckle to give passage to one end of the bale band, the buckle being made to turn a half revolution upon its pintle after the other free end of the band has been inserted longitudinally, so that the free end of the band is bent twice and securely fastened.

Mr. Charles Jackson, of California, Ohio, has patented an improved Bake Pan for baking and roasting various kinds of food, popping corn, roasting coffee, and for other similar purposes.

An improved Harness Buckle has been patented by Mr. Samuel M. Hamilton, of Fort Smith, Sebastian Co., Ark. Heretofore the hook of back band or trace carrier buckles have been constructed in one piece with the straight or flat frame thereof, and the sliding cross bar, which serves as a

assist in means for propelling the carriage (from below) to a position upon the rail in front of any particular window or door, and in means for regulating and rendering uniform the descent of persons on an endless rope depending from the carriage, an automatic governor and separate friction brake being employed for this purpose.

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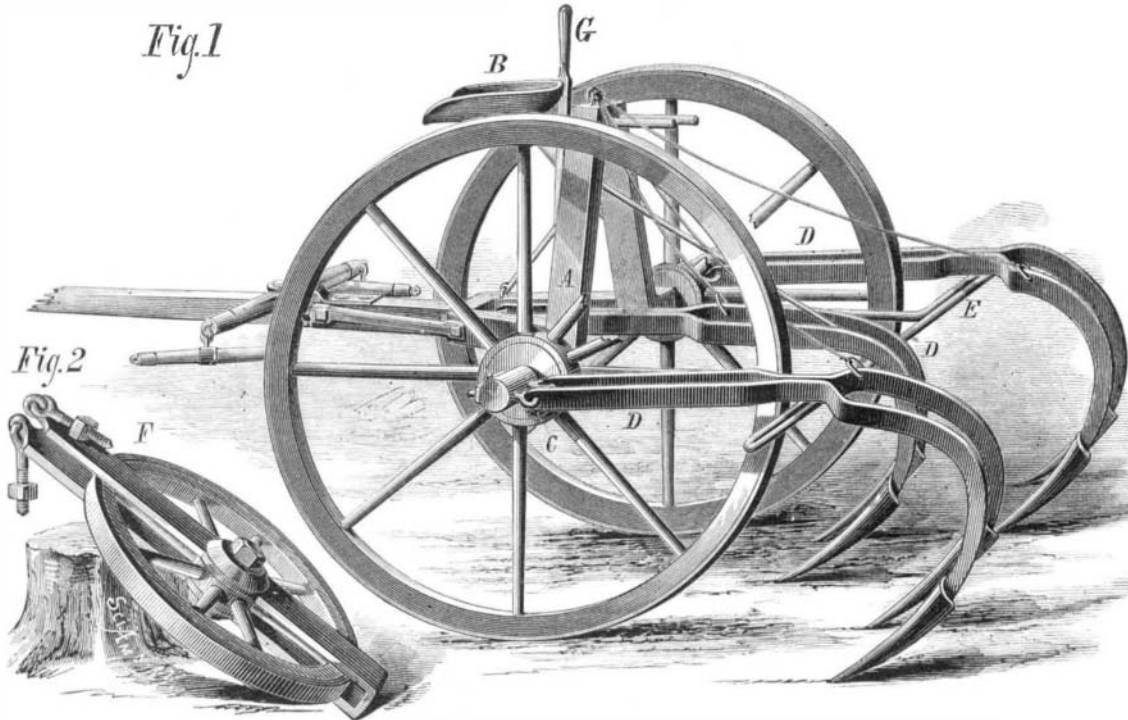
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**BURNS' CORN PLOW AND MARKER.**

tongue, has been made detachable. The improvement consists in providing the buckle frame with tops or shoulders, which limit the movement and thereby prevent detachment of the sliding tongue; and in making the hook separate from the frame, and hinging them together, whereby the buckle is less liable to chafe the animal; and whereby certain other advantages are attained.

subjecting them in closed retorts to a dull red heat without access of air, to chloridize the metals, and finally washing out the metal chlorides.

An improved Lathe for turning Masts and Spars has been patented by Henry Kean, of East Boston, Mass. This is a ponderous machine which is capable of taking a log and converting it, in a comparatively short space of time, into a smooth, well-rounded mast or spar. The lathe cannot be properly described without engravings.

Mr. Benson Lent, of Peekskill, N. Y., is the inventor of an improved Blind Hinge, which will be locked automatically when the blind is closed or fully open, and will retain the blind, also, in other positions, and will prevent the removal of the blind from its hinge pin, except when the blind is fully closed or fully open.

Mr. Patrick T. Weir, of New York city, has patented an improved Measuring Attachment for Refrigerating Milk Wagons. The object of this invention is to furnish, for the purpose of delivering milk in cities, improved measures for a refrigerating milk wagon. The measuring vessel serves to measure the milk as it is transferred to the tank, and there is a device for measuring the milk as it is taken from the tank.

Mr. Samuel M. Palmer, of Glens Falls, N. Y., has patented an improved Horse Collar for draught horses. It consists in a hollow perforated metallic pad, and in a device for forcing air through the perforations of the said pad.

Mr. John J. Brady, of Long Island City, N. Y., has patented an improved Step Ladder, which is of novel construction, and is provided with a peculiar hinge for connecting the rear brace with the ladder. By using this hinge the various sorts of stays that have heretofore been employed in preventing the rear braces from slipping backward may be dispensed with, as the hinge limits rearward movement of the braces.

Mr. Alonzo Templeton, of Louisville, Ky., has invented an improved Clamp for Securing Corks in Bottles. It may be readily applied to the neck of a bottle, so as to hold the cork firmly in place while the contents are going through the heating process, and as readily removed in order to allow the cork to be withdrawn.

Mr. Rudolph Loth, of Bridgeport, Conn., has patented an improved Blind Slat Adjuster, for setting slats of shutters and blinds in any desired position, and retaining them rigidly, without the annoying rattling or changing of the position of the same, and without giving a chance to turn the slats from the outside.

Samuel Strauss, of Charleston, West Virginia, has patented an improved Barrel for Shipping Bottled Liquors, and especially bottled beer, in such a manner that the packages may be handled with greater facility than the boxes in which such bottles are shipped at present, and that, furthermore, the bottles may be so packed as to be perfectly safe, and not exposed to the danger of getting injured or broken, the bottles being so supported in the barrel that there is a very small weight on any part of the same. The barrel may be securely locked, and the bottles arranged therein so that every bottle is separated from the remaining bottles, and may be taken out without disturbing the rest. The barrel is also of great advantage for reshipping and returning the empty bottles, and as every bottle can be taken out with great facility, it prevents the reshipping or losing of full bottles, which occurs when the same are packed with straw.

Samuel C. Smith, of Norristown, Pa., has devised an improved Hose Clamp, by which the leaks that frequently occur in the hose during fires may be stopped quickly and reliably, so as to save the time required for changing that section of the hose and prevent the delay incidental thereto.

Samuel Maneer, of Craigvale, Ont., Canada, has invented an improved Pole Tip for attachment to the tongues of vehicles for connecting the neck yoke with the tongue, which may be adjusted outward or inward upon the tongue, according as longer or shorter horses are to be used.

An improved Balloon has been patented by Mr. James Tracy, of Waltham, Mass. The object of this invention is to so improve the construction of balloons as to enable an aeronaut to vary the capacity and buoyancy of his balloon for sustaining it at any desired altitude, and for ascending or descending, without the use of hydrogen or other gas for the purpose, simply by varying the space of vacuum.

Mr. Simon L. Pollock, of St. Paul, Minn., has patented an improved Fireproof Shutter, formed of an interior and an exterior sheet iron wall, separated from a central partition wall by metallic cross strips, and joined at the edges by flanges to form closed chambers for inclosing air without admitting its circulation.

#### ELECTRICAL INDICATOR FOR SHOWING THE ROTATION OF THE EARTH.

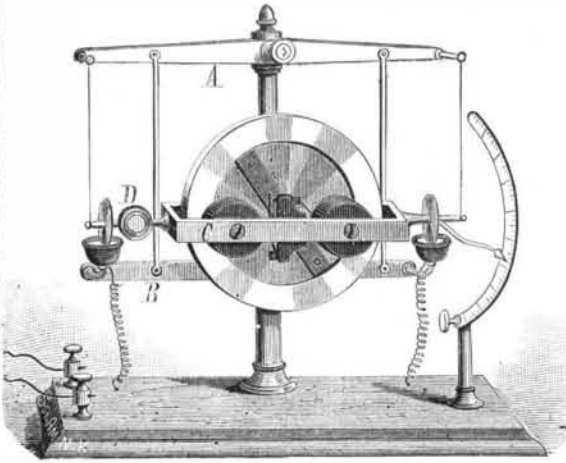
BY GEO. M. HOPKINS.

In my article on this subject in No. 1 of the current volume, a form of instrument is shown in which the index is placed in a horizontal plane, and would indicate an hourly motion of  $15^\circ$  at the poles, while at the equator it would not indicate at all.

In the accompanying engraving an instrument is shown which is suspended with the axis of the wheel supporting frame, C, at right angles to the plane of the equator and parallel with the polar axis of the earth. The frame, C, is suspended by silk threads from studs that project from the beam A. Two vulcanite mercury cups are supported by the beam B in position to make an electrical connection

with the disks on the axes of the frame, C. These cups are connected by a spirally coiled wire with the binding posts that receive the battery wires. The beams, A, B, are connected by rods, so that when it is desired to adjust the instrument the parts will maintain their proper relation.

Upon one of the axes of the frame, C, there is an index that moves in front of the scale of degrees. Upon the other axis there is a small mirror, D, for receiving a beam of light and projecting it on a screen. By this arrangement a very long index is secured without additional weight or momentum. For this suggestion I am indebted to Professor A. M. Mayer, who also suggested in his communication in No. 3 of current volume the suspension of the instrument by silk fibers.

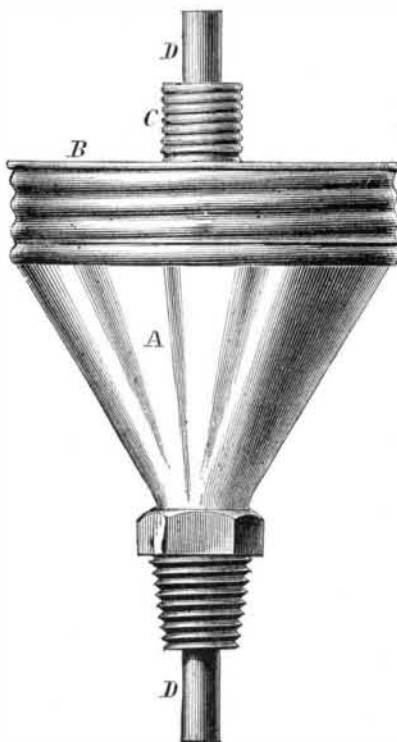


The instrument shown in the engraving should, when the axis of the frame, C, is adjusted equatorially, indicate  $15^\circ$  motion per hour in any latitude. The possible application of this instrument in a larger form to equatorial telescopes in place of the present clock trams, suggests itself. The only difficulty, if any, would be in providing telescope mountings of sufficient delicacy.

The arrangement of the wheel, the commutator and connections is substantially the same in this instrument as in the one previously described.

#### TIN SHAFTING CUP.

Our attention has been called to above cup as a simple yet effective device for conducting grease to the bearing for the purpose of lubricating in place of oil. We say simple because it works automatically and requires very little care compared to oil cups; and that it is effective and economical is demonstrated by the fact that it feeds only as lubrication is required, and thus all the lubricant is utilized, one pound of the grease doing as much work as two gallons of oil. It was supposed that when cups were invented to feed oil to the bearing as required, we had reached perfection in lubricating, but by the use of grease a coating is formed on the bearing which remains to do the work.



The question now is as to the best grease and cup. In 1875, the judges at the American Institute, New York, gave to Professor Thurston, who is authority on lubricants, five samples of oils and greases, to be tested as regards their lubricating qualities. They were marked A, B, C, D, E. After some three thousand tests made carefully and thoroughly, occupying three months to make, the result was given to the judges that the grease marked D was ahead of all competitors as a lubricant. And on this report the silver medal of the American Institute was awarded to R. J. Chard, 134 Maiden Lane, New York, whose patent lubricene was represented by letter D.

The report of the judges at Philadelphia on his patent cup, of which we give an engraving, was that it is the best friction feeding cup.

The engine that furnishes the power to machinery in American department at the Paris Exhibition is fitted up with patent lubricene and cups. The engraving needs but little explanation. D, the feeder, passes through the body of the cup, A, with its cover, B, and also the screw cap, C. This cap, fitting over the spring of the feeder, is movable, and can be adjusted to regulate the feed by the pressure given to the spring. This principle of feeding lubrication to the bearing is the only true automatic and economical principle. The cost of lubricating is thereby reduced to its minimum. This cup is adapted to ordinary shafting, and is very effective, and can be set and will work at any angle.

#### THE MUSICAL MECHANISM OF THE CINCINNATI ORGAN.

We recently referred to the large organ lately erected in the new Music Hall at Cincinnati as being among the largest pipe organs in the world, certainly the largest ever made in this country. It comprises five different organs, namely, the great organ, the swell organ, the choir organ, the solo organ, the pedal organ; these may be played separately or in combination. There are four key-boards, each composed of 61 notes (from C<sub>2</sub> to C<sub>4</sub>), five octaves long, and each controls the valves that admit the compressed air to the pipes belonging to its particular organ, or division of the whole organ. Just above the great organ key-board are placed five white thumb knobs, and a smaller black one near each, while between each pair is a tablet showing its use. These thumb knobs control the couplers by which the various key-boards are connected to the great organ key-board, so that either may be played from it without removing the hands. Under the manual key-board there is the pedal key-board, which has a compass of 30 notes (from C to F<sub>3</sub>), two and a half octaves. Here there are the white and black keys, the same as on the manual key-boards, only made of wood instead of ivory, and larger, as they must be played with the feet. This key-board opens the valves to the pipes of the pedal organ, which includes the immense thirty-two foot open diapason pipes.

Just above the pedal organ key-board lies the crescendo pedal, a slide having frequent projections against which the feet are pressed in operating it. Above this, again, there is a row of combination pedals, ten in number, and in the center the swell pedal, which is so nicely balanced and adjusted that a very slight movement of the toe or heel causes it to act, and yet it remains exactly where it is left. To the right and left of the manual key-board are terraces of knobs, angled so as to front the organist, and all within easy reach. The organ, therefore, has four manuals or key-boards of five octaves each, and a pedal key-board of two and a half octaves. The great organ has 22 complete registers, 228 pipes. The swell organ has 19 complete registers, 1,708 pipes. The choir organ has 17 complete registers, 1,281 pipes. The solo organ has 7 registers, 366 pipes, and 32 bells. The pedal organ has 16 complete registers, 600 pipes. There are 15 mechanical registers, and 14 pedal movements. A summary of these gives 96 registers, 6,237 pipes, 32 bells, 14 pedal movements.

In the cellar under the organ is the foundation upon which the organ stands. Large brick columns, placed closely together, reach from below the surface to the heavy capping timbers on which the floor timbers are laid. These are covered with two thicknesses of flooring, the upper one of which is of two inch pine, the whole forming a support that will sustain the immense weight of the instrument without the slightest deflection.

Five motors are employed to operate the five bellows in the organ. To supply these motors, a six inch pipe is led into the cellar from the street main, branches from which convey the water, having a pressure of 52 pounds per square inch, to the motor. Each branch has its shut-off and regulating valves independent of the other; so that in case anything should happen to either, the others can be worked. Here also are the levers for hand blowing, so that, should the water pressure fail at any time, man power can be substituted.

The bellows consists of two parts—the feeders and the reservoir. The feeders of these bellows are known as square feeders, in distinction from those usually employed, where they are hinged on one side, called diagonal feeders. Those here are one half the size of the bellows each, and arranged so that as one is going up the other is coming down. As one drops down, the valves in the bottom open, allowing it to fill with air, which close as soon as the motion changes. The air is then compressed until it raises the valves between the feeder and the reservoir, allowing the air to pass into and inflate the reservoir. To obtain the necessary wind pressure, weight is placed upon the top of the reservoir, and in the aggregate about 5,000 pounds is used for this purpose. Beyond the bellows, on either side, are the lower pipes of the 32 foot open diapason, those seen on each wing of the organ from the hall. By placing a rule on the lower C, it is found to be 24 inches in width by 30 inches in depth, with a mouth seemingly large enough to require a bellows of its own to furnish a supply of wind for it.

Back in the rear, against the wall, are the pipes of the contra-bombard, 32 feet. On examination of the lower note of this register it is seen that the tone is made by the vibration of a piece of brass, called a "reed,"  $13\frac{1}{2}$  inches long,  $1\frac{1}{4}$  inch wide, and  $\frac{1}{8}$  inch thick. It vibrates very slowly, but with such an effect as to be heard even when all other registers are used. The work of construction was begun by the builders, Messrs. E. & G. G. Hook & Hastings, of Boston, Mass., in May, 1877.