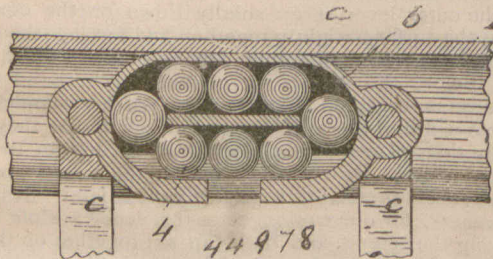


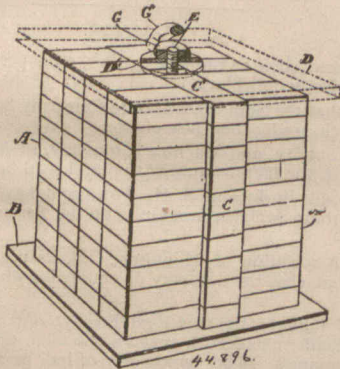
RECENT CANADIAN PATENTS.

A patent No. 44,917, has been granted to James Thomas McCabe, of Toronto, Ont., for a travelling hanger for doors, curtains, etc., the principal features of which are: the combination of a track composed of a tube having a longitudinal slot formed therein, and bearing surfaces arranged on



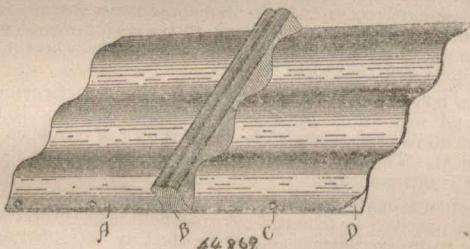
each side of the slot, bearing balls running upon the surfaces, a carriage supported by said bearing balls, a depending arm from the carriage, and means for detaching the depending arm to the object to be supported. An illustration of the device is given herewith.

Thomas Parker, John E. Wright, Francis F. Stuart and Alexander M. Colquhoun, of Toronto, Ont., have been granted a Canadian patent, No. 44,896, for a shipping device for bricks and similar articles, consisting of a top and bottom board, central bolt passing through a central opening



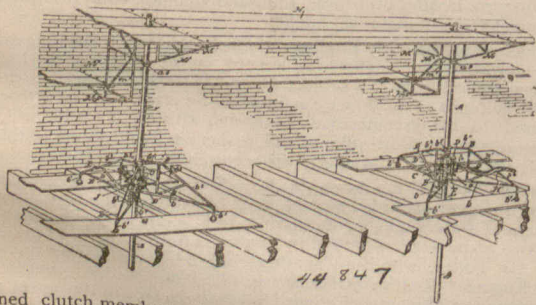
within the pile of bricks—a ring or clevis nut G, screwed on to the top of the bolt and top and bottom washers D, and B, surrounding the bolt and situated between the nut G, and the head of the bolt respectively, as shown in the accompanying illustration.

Hugh Silver, of Lindsay, Ont., was on the 11th of December last, granted a Canadian patent, No. 44,869, for a wood wall covering, which consists of the combination with a wall or similarly substantially flat



surface, W, of sheets of veneer, A, corrugated in line with the grain thereof, and having some of the bottoms of the corrugations nailed to wall, and a moulding B, whose under surface fits the corrugation, set over the joint between the sheets, as per illustration.

A Canadian patent, No. 44,847, for a builder's scaffold, was granted on December the 9th last, to John Elzear Ennis, of Duluth, Minn. The invention consists of a combination with a main frame or support, of a shaft movable vertically in frame, a platform bracket supported on the upper end of the shaft to turn thereon, and a clutch mechanism located within the main frame, engaging the shaft; in combination with the shaft A, of the lifting mechanism, consisting of yoke C, lever D, pivoted therein, oppositely



inclined clutch members G and J, having screw shanks projected from opposite sides thereof, link arms E and E', screw nuts F, and detachable weights; the combination with the shaft A, and the bracket Mx, supported thereon, consisting of an upper section M1, a downwardly extending portion M2, and an outwardly extending section M3, the plates P, having concave projecting lugs P1, and the planks held on the said plates P, as shown in illustration.

The second edition of the December World's Fair Cosmopolitan brings the total up to the extraordinary figure of 400,000 copies, an unprecedented result in the history of magazines.

USEFUL HINTS.

The paint on the outside of a brick wall 30 feet in length and 20 feet in height of a warehouse in New York came off after a year's exposure; in another year the hard bricks of which the wall was built began to crumble. The cause, which for some time was a mystery, was eventually found to be a large quantity of salt in burlap bags stored behind the walls. Although thick boards intervened at places the salt had thoroughly impregnated and destroyed the solid brick wall, and therefore the oil and paint.

GOLD LACQUER.—For making gold lacquer for metals, the following formulas are recommended: 1. shellac, 100 parts; alcohol, 895 parts; boric acid, 5 parts; picric acid, enough to color. 2. dragon's blood, 7½ parts; gamboge, 40 parts; mastic, 30 parts; sheilac, 30 parts; elemi, 7½ parts; sandal-wood, 20 parts; sandarac, 20 parts; venice turpentine, 15 parts; alcohol, 850 parts. 3. shellac, 120 parts; gamboge, 30 parts; mastic, 30 parts; sandarac, 60 parts; aloes, 10 parts; venice turpentine, alcohol, 750 parts.

An experiment with two bars of iron separated by a layer of charcoal and subjected to an electric current of fifty-five amperes at two and a half volts has resulted in one bar, the cathode, being converted into steel on the side next the charcoal, while the other bar, the anode, remained unaffected. This was after three hours of heating under the current, and is one of a series of experiments carried out recently by M. Garnier, which are likely to lead to better understanding of the principles underlying the process of converting iron into steel.

TO MOUNT PHOTOGRAPHS WITHOUT BUCKLING.—The satisfactory mounting of photographs is a troublesome operation, and the following suggestion from a contributor to the *Outlook* may be of assistance to amateurs: I have found a method by which a photograph or engraving can be mounted on the thinnest paper without curling or wrinkling. If the picture is a photograph it should be ironed out smooth with a hot iron and then trimmed. Mix a little gum-arabic in hot water, so as to make a rather thick mucilage. Place the picture on the page in position and mark just inside the corners. Remove the picture and take some of the mucilage on a ruling-pen and draw a heavy line of mucilage from one point to another, so as to make a line of mucilage all around the place where the picture is to be. As soon as the mucilage is sticky, put the picture in place, and a book over it to keep it flat. When dry, you will have a smooth mount that will not curl.

WEIGHT OF MATERIALS.—According to an American exchange, roof boards weigh about three pounds per superficial foot. Terra-cotta tiling weighs from 25 to 35 pounds per square foot. Hollow tile for five-inch partition weighs from 22 to 25 pounds per superficial foot. Lath and plastering, two-coat work, weighs from 9 to 12 pounds per superficial foot. The weight of a superficial foot of brick work, eight inches thick, including mortar, is from 83 to 87 pounds. An iron roof 100 feet wide, with a rise of one-third pitch, will weigh from 10 to 15 pounds per superficial foot. One hundred pounds per square foot, distributed uniformly over a surface of a bridge, is a safe working standard. The weight per square foot of roof tiling, set in iron or between wood rafters ready for slating is about 12 lbs. A fireproof floor, constructed of iron beams and four-inch brick arches, will weigh from 65 to 75 pounds per superficial foot. The safe and proper bearing of a joist, timber and girders supporting a floor should not exceed ten tons on brick walls and fourteen tons on good stone walls. A fireproof floor constructed of iron beams and of iron arches made of No. 18 iron, and filled in on top with concrete or slag and cement, will weigh about the same as brick work four inches thick. Fireproof floor made the same as above, with the introduction of hollow tile arches, instead of brick, concrete or slag, will weigh from 12 to 55 pounds, according to the thickness of the arch, running from 4 to 16 inches.

LEAKAGE OF AIR.—The porosity of walls and the vast amount of leakage around door and window frames are seldom appreciated, says Carpentry and Building, by those who talk of stagnant air. Experiments with ordinary windows have made evident a leakage of eight cubic feet per minute while the passage of air through apparently tight walls has been frequently shown by experiment. In one instance a room supplied with hot air from an ordinary hot air furnace was tightly closed. The fire place was stopped up, windows were packed with rubber molding and the door shut. The wood work was sheltered and the brick work oiled. A measurement of the air volume entering showed that it was nearly equal to that when the doors were open. If the air entered it was obvious that it must escape somewhere. A second experiment was made after five coats of paint had been put on the walls and ceiling and three coats on the floor. Still the air entered through the register in large quantities, in fact its volume was only 20 per cent. less than in the former case. Such wholesale leakage readily explains the cause of low temperatures in exposed rooms on windy days, for the outside pressure exceeds that within and the cold air actually leaks through the walls. Surprise is sometimes expressed that in many instances no vent flues are provided when the blower system is installed. This is particularly true of manufactories, offices and stores. Nevertheless, a volume of air sufficient to change the entire cubic contents once in 10 to 12 minutes is frequently supplied in such buildings and escapes only through walls and crevices.

PRESSURE OF ARCH STONES.—The result of investigations on the pressure of arch-stones on a center is, says the National Builder, that the center should be combined in such a manner as to withstand as advantageously as possible the effort of the stones to slide upon their beds. Experiment has shown that hard stones have not any tendency to slide on the bed until it is elevated to about 36°; and it has also shown that when the stone is set in fresh mortar it does not begin to slide until the bed is elevated to an angle of from 34° to 36°. Vossiers of soft stone, absorbent of moisture, have been raised to an angle of 45° without sliding, when the center of gravity did not fall without their base. Reasoning from these experiments, and assuming 32° as the limiting angle of resistance, the conclusion would be arrived at that the center did not require to commence until the arch stones had reached that angle; and in the Pont du Gard, and the arch of Cestius at Rome, the corbels on which the centers were supported remain at from 25° to 28° above the springing. Beyond 32° the weight on the center goes on increasing as it approaches the keystone; but in practice it is safe to consider the whole weight of the stone as resting on the center, when a vertical line drawn through its center of gravity falls without the lower bed of the stone; and the amount of error is not great, and is on the safe side, if this is taken to be the case when the bed of stone exceeds 60°. But to make this observation more accurate, we quote Mr. Tredgold's words. He says: "When the depth of the arch stone is nearly double its thickness, the whole of its weight may be considered to rest upon the center, at the joint which makes an angle of about 60° with the horizon. If the length be less than twice the thickness, it may be considered to rest wholly upon the center when the angle is below 60°, and if the length exceed twice the thickness the angle will be considerably above 60° before the whole weight will press on the center."