

its way into the building. This system is less objectionable in a southern exposure, and it may be made perfect if a steam pipe, through which exhaust steam escapes, be run along-side the gutter to keep it warm. The second method of meeting the roof-water difficulty is to carry the rear wall a foot or two above the roof timbers and cope it the same as the side walls. Form a valley against this wall to act as a gutter, which will lead the roof-water to a sluiceway or opening in the parapet wall, in which is firmly secured a spacious box-head attached to the leader, the opening in the wall being protected by lattice guards to prevent the washing down of cakes of ice. This method dispenses entirely with the metal gutter, although it still adheres to the metal leader. This system also requires a tight system of flashings in the brickwork near the valley in order to prevent the water from soaking into the walls. The third method of conveying the water from the roof differs but little from the second. By this method, the soil pipe, which is inside the house, is made the leader, and the water is carried directly from the roof to the sewer, without being exposed to the outside temperature, and is therefore not likely to freeze. The warmth ascending the soil pipe in an occupied building, is generally sufficient to keep the mouth of the pipe from freezing, and when a suitable cage or trap is placed over the orifice of the pipe, no ice will be able to enter it and thereby reduce the temperature. We have seen this plan put into practice with very satisfactory results. The apprehension of any possible freezing of the water in this soil pipe is a perfectly idle one, because the pipe is too far removed from the action of the frost, and the gases of decomposition within the pipe generate heat enough to keep the temperature of the pipe considerably above freezing through its whole line to within a foot or two of the roof. Roofs drained in this way are subject to fewer accidents, and the tinning as well as the rear brick wall are exempted from the trying effects of a cracked gutter and a bursted leader.

It is not often the Canadian bricklayer **Retaining Walls.** is called upon to build retaining walls, but, sometimes there are occasions on which his services will be required for this purpose; and it is as well for him to be armed with the required knowledge in order to properly execute the work when called upon to perform it. Earth, when thrown into a heap assumes a conical shape, the slope or slant of the sides—ordinarily—forming an angle with the horizon of 45 degrees; which inclination may be taken as a mean slope into which earths newly thrown up will arrange themselves; and from this fact, it may be gathered that a very strong wall will not be required to retain earth in position where the slope of the bank is only 45 degrees or less steep. When the earth is replaced behind the wall it should be firmly tramped down and made to hug the wall closely, as the wall is carried up, that in settlement it may not leave hollows behind the brickwork. The wall should be built on a solid concrete foundation and be furnished with ample footings in good set-offs, and be battered towards the bank which it is built to keep in position in proportion to the height to which it is intended to rise. It may be stepped or diminished in thickness as it ascends. If the bank is very steep and the pressure against the wall likely to be great, the wall may be strengthened by the addition of buttresses placed at intervals, and built in with the wall as the work progresses. There

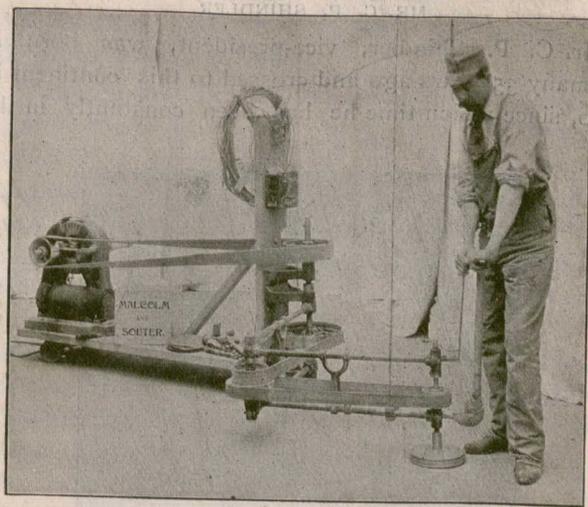
should be left in the wall at frequent intervals "weep-holes" to allow the ingress of air and escape of moisture from behind the wall. These "weep-holes" may be formed by leaving out headers in the brickwork or by building in common drain tiles of small bore, and letting their outward ends project somewhat over the face of the wall. This latter method is preferable, as then any drainage that may flow will be carried to the outside, where if only headers are left out, a portion of the water will soak into the lower brick and eventually damage the wall. In the construction of buttresses, or "counterforts" as they are called in England, the wall should be well bonded into them, and the top of the buttresses should be sloped off along with the wall and finished, or coped off, with stone or Portland cement. All bricks used in the building of retaining walls, should be hard and well-burned. Soft or clayey bricks should never be used near earth contact, or when exposed to the weather.

### THE HAMILTON BUILDERS' EXCHANGE.

We are advised by the secretary of the Hamilton Builders' Exchange that there is no foundation for the statement made in a paragraph recently published in the daily papers that it had been decided to close up the organization. The secretary suggests that the statement was probably the outcome of the fact that no meetings were held during the summer months.

### MACHINE FOR POLISHING PARQUETRY FLOORING.

Herewith is illustrated a machine for polishing parquetry flooring, designed by Messrs. Malcolm & Souter, of Hamilton, Ont., and which was used to good advantage on about 20,000



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feet of parquetry flooring laid in the new Royal Hotel in that city. Being unable to obtain men to plane and scrape such a large quantity of flooring, Messrs. Malcolm & Souter overcame the difficulty by inventing this machine. They found that the work was done better than by hand, as no plane or scraper marks were left. The machine is a regular disc sander erected on a platform and driven by an electric motor. The platform is on four wheels covered with rubber; the two under the motor are on a centre with handle attached for moving about, and the two under the machine are parallel with the platform and keep the machine steady. The motor is two horse power. The only objection met with was the dust, and this was overcome by hanging cotton sheets on all the openings. This machine can only be used profitably on large contracts, but should they have occasion to use it again, the inventors state that they would attach a small fan on one end of the motor and connect it with the disc, and blow all the dust out with a flexible exhaust pipe of canvas. The machine polished about 36 square feet per hour.