

at the time of erection by carefully inserting plugs in the joints. Should this not be done at the time of erection, and it is found necessary to fix electric fittings or hook-rails, the joints should be cut out and a plug built in, as any attempt to drive a nail into the tile is generally a failure, besides being liable to break the face of the whole tile.

Those of us who have had to do with partitions know only too well that they mostly have the annoying habit of showing cracks, which, more often than not, go right through. These cracks may develop from either of the following causes:—

The cracks generally occur just under the ceiling or near walls and door frames, or at top corners of door frames. The cracks at the tops or by the walls may be caused by variation of temperature, causing expansion or contraction, or through the supports deflecting or settling. Cracks also are generally to be found on top stories of buildings with large flat roofs, owing to the expansion of the flat as well as the partition, and up to the present I have not seen any successful method of stopping this occurring with a built-up partition, for even when cut and carefully filled in, the cracks will readily appear again.

The cracks on doors are particularly noticeable when the jambs project a few inches above the frame, and this is caused by the wood frame swelling, through absorbing the moisture from the partition whilst it is being erected. These can generally be stopped up successfully if cut out and filled in, after the partition has had time to dry out, and will not appear again, provided the door frames are fixed rigidly enough to prevent the partition from being shaken when the door is shut quickly. The best remedy, however, is to prevent this by stopping the door jambs off flush and carrying the partition over in one slab. This method is now recognized by most practical fixers as the best, and, with few exceptions, is carried out wherever possible.

The position of a partition is too often left to be settled after the floor and beams are all in, and then it is placed anywhere, whether the weight is supported by a main beam or only by the floor, and more often than not is placed on the floor, away from the main beam, which may only be calculated to carry a load of 100 lbs. per foot super; whereas many 3-in. partitions, when plastered both sides, weigh 18 lbs. per foot super, and 10 ft. is quite an ordinary height for such a partition; therefore, one foot run would weigh 180 lbs. The heaviest articles of furniture in domestic buildings are generally placed against the partition, and in an office it is quite an ordinary occurrence to find a heavy safe one side and a tier of shelves filled with books and papers on the other. Taking the total weight of the safe at 15 cwts., placed in the centre of the bearing, and the bookcase at 2 cwts. per foot run, we find, if a 3-in. partition, 12 ft. wide \times 10 ft. high, happens to be placed on the floor, as per diagram, we get the following load per foot super in that particular place:—

	Pounds.
3-in. partition—18 lbs. per ft. sup. \times 12 ft. wide	
\times 10 ft. high = a distributed load of.....	2,160
One safe = a distributed load of 30 cwt. =	3,360
One tier of shelves, 10 ft. wide, at 2 cwt. per ft.	
run = 20 cwt.	2,240
Giving a total load of.....	7,760
Taking the width of floor occupied as 3 ft. \times 12 ft.	
= 36 ft. sup.	

Therefore, $7,760 \text{ lbs.} \div 36 = 215.5 \text{ lbs. per ft. sup.}$ on this particular portion of the floor, which is more than double what the floor weight and main beams were calculated to carry, and, except for the large safety factor required by the authorities, there would be more than mere cracks appearing. The writer is strongly of the opinion that the position of all partitions wherever possible should be settled at the time of planning, and proper beams arranged to carry them, and when this cannot be done, it is advisable wherever possible to have partitions cast in situ and reinforced with small, steel rods, forming a beam from wall to wall. This method has been carried out by me, and has always proved most satisfactory, and helps very considerably to tie the wall and distribute its load more evenly, and costs very little more than a built-up partition; being quite solid in construction, it is thoroughly hygienic.

There is yet another means by which a partition can be constructed without slabs, and where a very thin partition is required, it has many advantages, as when finished and the whole thoroughly set, it forms a very strong and rigid structure, being light, occupying little space, and being practically sound, fire and vermin-resisting. There is no temporary sheeting or strutting required, and the work can be done with little labor.

The foundation work usually consists of vertical rods, securely and tautly fastened at top and bottom by screws, nails or clamps at about 12-in. centres. To these supports expanded metal lathing is firmly secured by soft wire or some other convenient means, and both sides covered by any quick and hard-setting plasters, which can be finished to a smooth face without loss of time.

The solid partitions are sometimes built only $1\frac{1}{2}$ in. thick, but generally made to finish 2 in. thick, and can be used in combination with any class of concrete floors and ceilings, or ordinary wooden floors. Doors and other openings that may be required for lifts or ventilation can easily be formed and frames securely fixed in position at the time of construction, or after the partition is up. The whole forms a partition possessing all the desired advantages of a divisional wall not required to carry any weight, and occupies the least possible space for such purposes. This class of partition is very suitable for internal lift wells, where good anchorage can be obtained for the vertical tie-rods, as it takes up little room and stands vibration.

These are only a few of the many classes of fire-resisting partitions, but I have endeavored to include those most generally used. I have evaded mentioning the names of any particular manufacturers, as many are known to all of you, and I trust that you have not been bored by my effort to explain a few practical details in connection with my experience of the past.

As mentioned previously, one of the most troublesome things in connection with partitions is their habit of cracking. I hope, however, that some useful information regarding a cure for the complaint may be brought out in discussion, as no doubt partitions will play an even larger part in future constructions of small property than they have done in the past.

TORONTO BRANCH, AM. INST. OF E. E.

The Toronto section of the American Institute of Electrical Engineers held a meeting last Friday, when W. P. Dobson read a paper on "High Voltage Phenomena." One hundred and ten members of the section were present.