

(No Model.)

G. FITCH.  
BUILDING.

No. 442,875.

Patented Dec. 16, 1890.

Fig. 1.

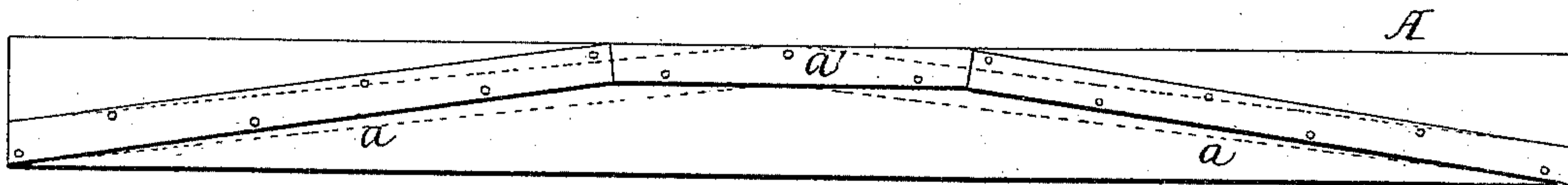


Fig. 2.

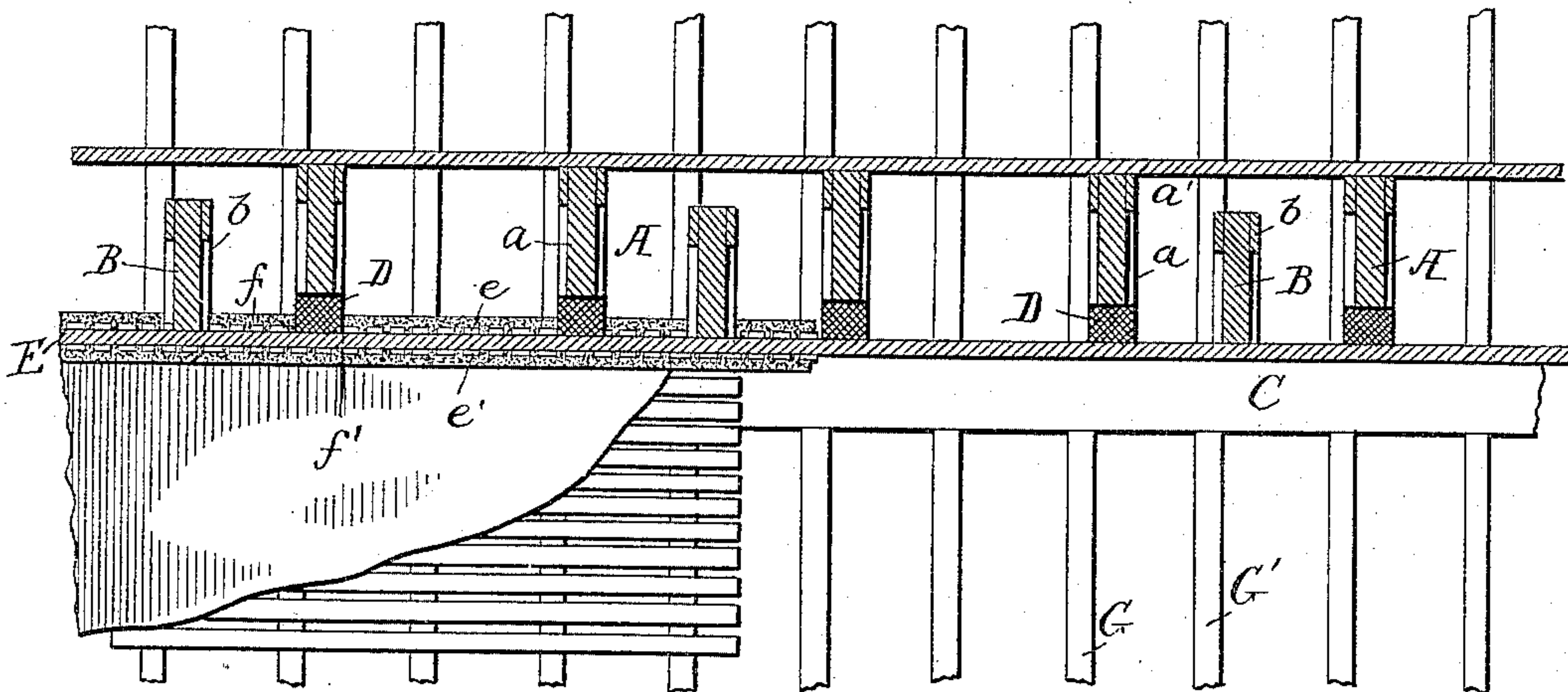


Fig. 3.

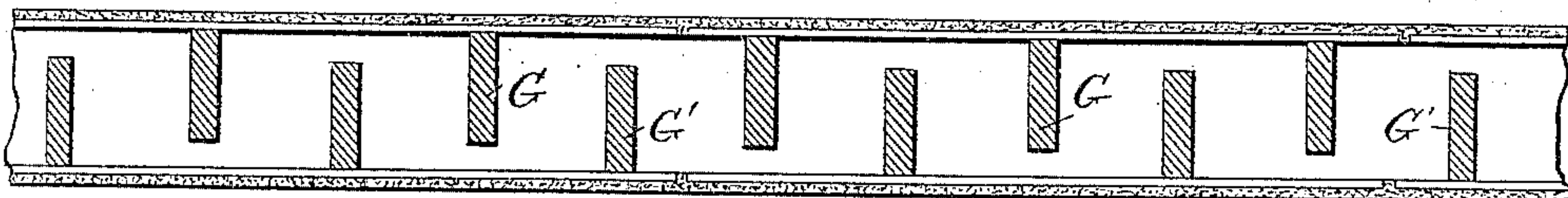
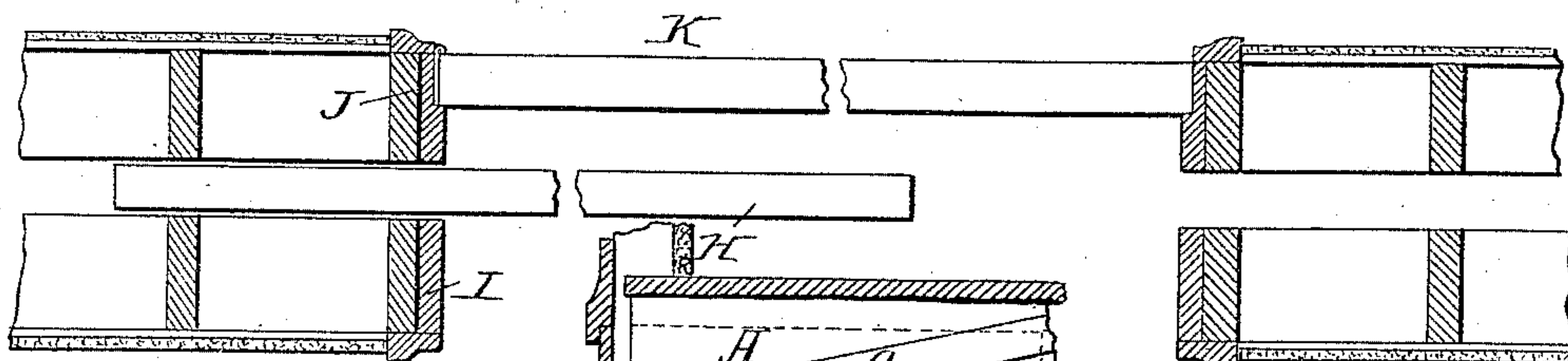


Fig. 4.



WITNESSES

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# UNITED STATES PATENT OFFICE.

GEORGE FITCH, OF LENOX, MASSACHUSETTS.

## BUILDING.

SPECIFICATION forming part of Letters Patent No. 442,875, dated December 16, 1890.

Application filed May 31, 1890. Serial No. 353,732. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE FITCH, a citizen of the United States, residing at Lenox, Berkshire county, State of Massachusetts, have invented certain new and useful Improvements in Buildings, of which the following is a specification.

My invention relates to improvements in the construction of buildings of various kinds; and one of the objects of the invention is to so arrange the parts thereof that they will not readily transmit shocks, jars, or noises from one apartment to another.

A further object is to improve the structures so that the requisite strength can be obtained at the slightest cost and at the same time the transmission of noises can be prevented.

For the purpose of carrying out these objects my invention consists in the various constructions and arrangements of parts hereinafter more particularly set forth.

In the accompanying drawings, Figure 1 is a side view illustrating my floor-joist adapted to be applied to a floor and ceiling of an apartment in a house. Fig. 2 is a similar view at right angles to the first. Fig. 3 shows my invention applied to a partition-wall, and Fig. 4 shows another and extended application of my invention. Fig. 5 is a sectional view showing the joist resting on the sills out of contact with the side wall of the house.

It is well known that in the construction of buildings as usually made there is great liability to annoyance from the transmission of sounds or noises from one room to another, and especially is this true in the transmission of sounds from a room above to a room below. To overcome this objection many devices and arrangements have been suggested, all of which, so far as I am aware, embody a considerable expenditure of money and time in their construction. More than that, they usually result in making a thick partition-wall between the two rooms, occupying considerably more space than the ordinary flooring, and consequently increasing the cost of the building. I avoid these objections to a great extent in the construction herein described.

One of the distinguishing characteristics of my invention consists in a floor-joist which is strengthened or trussed by braces secured

to one or both sides thereof. Thus in the drawings, A represents a floor-joist which may be of any suitable width and thickness, according to the length thereof and the purposes for which the building is to be used. It is common to use comparatively heavy floor-joists which in themselves are strong enough to support the floor, and to stay them by bridging or cross-braces from one joist to the other to prevent them from moving laterally. I have found, however, that by applying the braces *a* to one or both sides of the floor-joists in the manner shown—that is, extending them diagonally from edge to edge—I can use a very much lighter floor-joist to sustain the same amount of weight than in the usual construction. Moreover, this construction is very much cheaper than a joist having the same amount of strength cut in one piece. The braces running diagonally across the sides of the joists tend to strengthen the joists, not only against vertical flexion, but to a great extent against lateral flexion, and the ordinary bridging between the adjacent joists is therefore avoided. Sometimes I bring the ends of the braces *a* adjacent to each other near the middle of the joist, as indicated in dotted lines, Fig. 1, the other ends of the braces extending to the lower edges of the joist near its ends. When, however, the joist is long, I have found it convenient to apply a straight portion *a'* to the middle portion of the joist and to place the diagonal braces *a* at the ends of the joist.

This construction of floor-joists not only aids in strengthening the joists, so as to more properly support the floor, but admits of the second feature of my invention, which consists in the use of similar joists B, preferably provided with the braces *b*, for supporting the ceiling of the room below. These joists are arranged intermediate between the floor-joists with their tops a little below the tops of the floor-joists and their bottoms extending slightly below the bottoms of the floor-joists, so that there is no communication between the floor-joists and the ceiling-joists. I have found that in this construction it is not necessary to use as many ceiling-joists as there are floor-joists, and the ceiling-joists may be arranged at equidistance apart and in some instances at every other space be-



tween the floor-joists. They may also be made thinner or of less width than the floor-joists, as they have but little weight beyond their own to support and are entirely independent of the floor or any weight that may be thereon, so that it is only necessary to make them of sufficient strength to prevent sagging of the ceiling. These ceiling-joists may extend an inch (more or less) lower than the floor-joists, so that but a trifle more space is taken up by this combined arrangement than when the ceiling is secured directly to the floor-joists.

In the drawings it will be seen that the ceiling-joists rest directly upon the cross-bars C, secured to the studding G'. The floor-joists, however, are preferably separated therefrom by some sound-deadening device or non-conductor of sound, as D, which may be a block of india-rubber or similar material, and the ends of the joists should not come in contact with the covering of the house or any other timber in the walls, and thus the floor-joists and the floor thereon are completely isolated from the walls of the building, so that the sound will not be transmitted from the floor thereto.

In some instances, especially where there is heavy and noisy machinery upon the upper floor, I have found it desirable to lath and plaster on top of the furring of the ceiling as well as on the underside. Thus in Fig. 2 the furring E is shown applied directly to the ceiling-joists, and the laths *e* and *e'* are applied on both sides of the furring, and the plaster *f f'* is placed above and below the lathing. It is evident that in this construction the ceiling will be less liable to crack or become injured from any sagging or vibration transmitted to the floor than when the ceiling is connected directly to the floor-joists.

In putting up the studding or partition-walls between the rooms the same general principle may be carried out as illustrated in Fig. 3, in which alternate studs G G' are arranged slightly out of line with each other and the laths on each side are attached to

every alternate stud, leaving a slight space between the intermediate studs and the laths on each side. In this way there is no connection between the two faces of the partition, and sound will not be transmitted thereby, there being practically two separate walls between the two adjacent rooms, and the thickness of the wall is only increased about an inch more than in the common construction.

Sometimes it is desirable to have a double wall, providing space for a sliding door II, as indicated in Fig. 4. In this construction the sliding door II is hung upon one of the portions of the double partition, as I, while the other portion J may be provided with a swinging door K, and thus a complete double partition separating the two adjacent rooms is furnished.

From the above description the general principles of my invention will be understood, and it is evident that it may be applied in many and various ways to adapt it to the general plan or construction of the particular structure in which it is used.

What I claim is—

1. In a building, the combination, with the floor-joist provided with longitudinal brace-pieces, of the independent ceiling-joist also provided with longitudinal braces and arranged between the floor-joists and projecting slightly below the latter, substantially as described.

2. In a building, the combination, with the longitudinally-trussed floor-joists, of the independent ceiling-joists arranged between the floor-joists, the floor-joists being isolated by sound-deadening devices, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE FITCH.

Witnesses:

THOMAS POST,  
LEVI C. MILLER.