

(No Model.)

E. M. MURRAY.  
STORE SERVICE LADDER.

No. 442,531.

Patented Dec. 9, 1890.

Fig. 1.

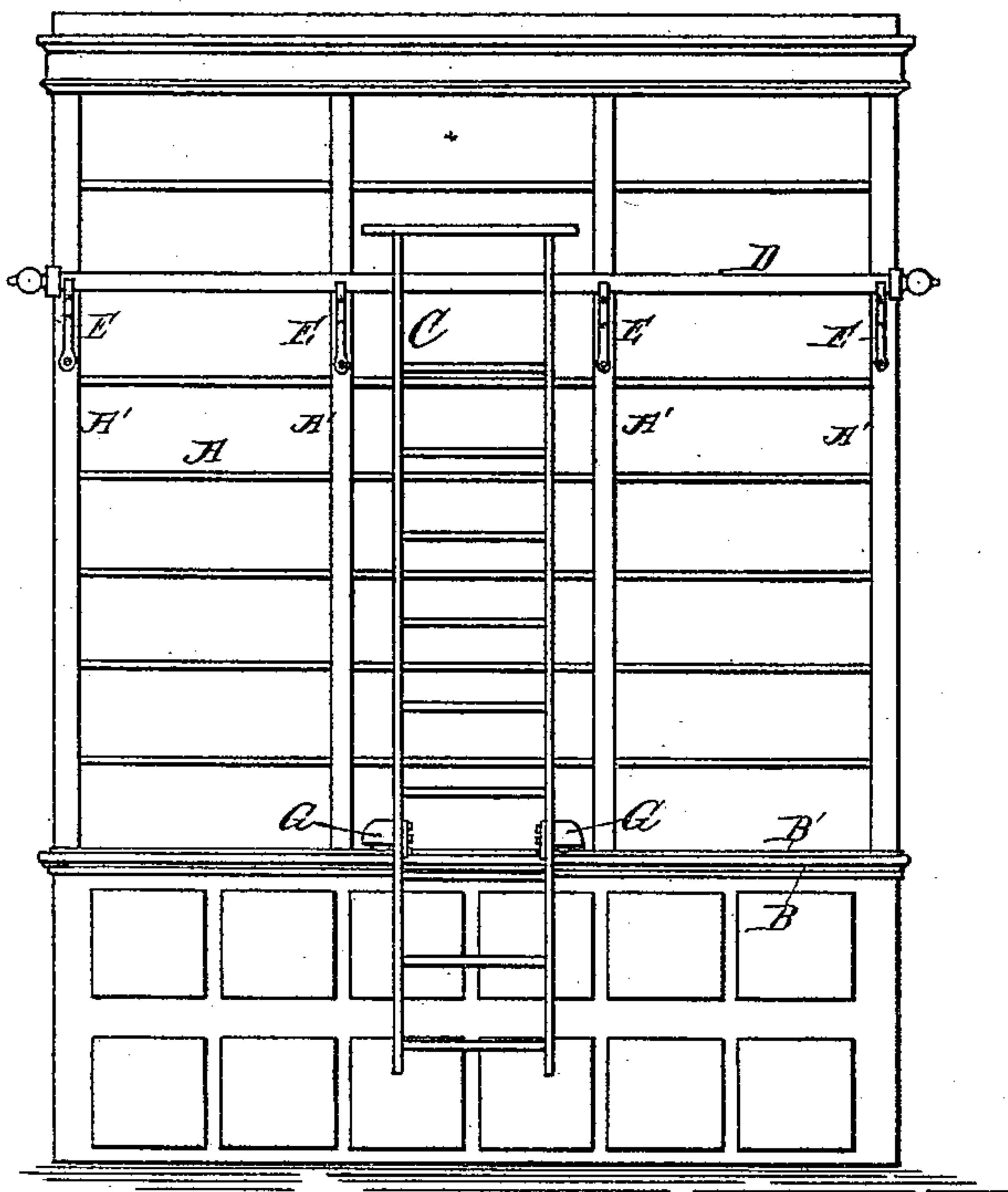


Fig. 2.

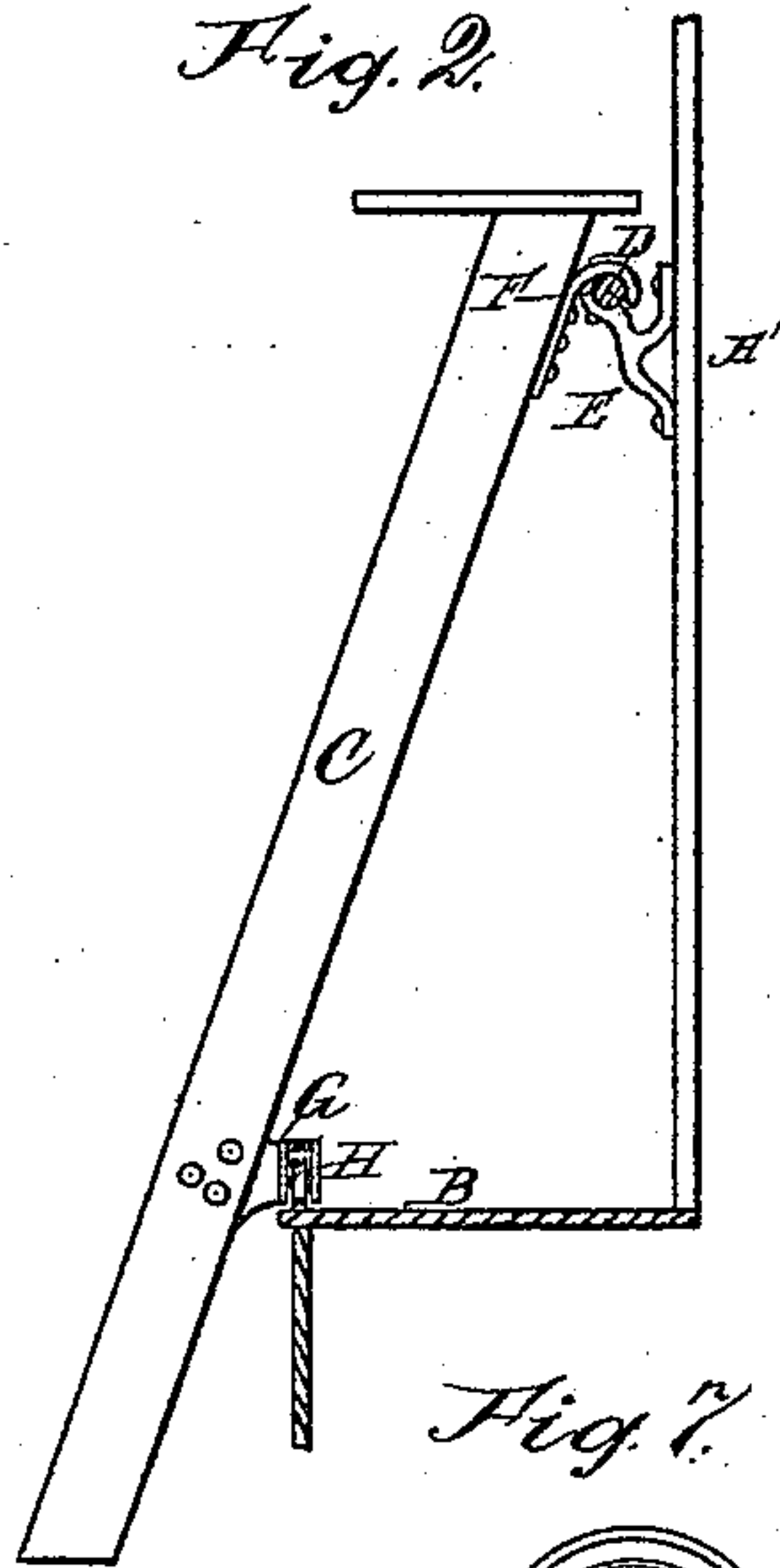


Fig. 3.

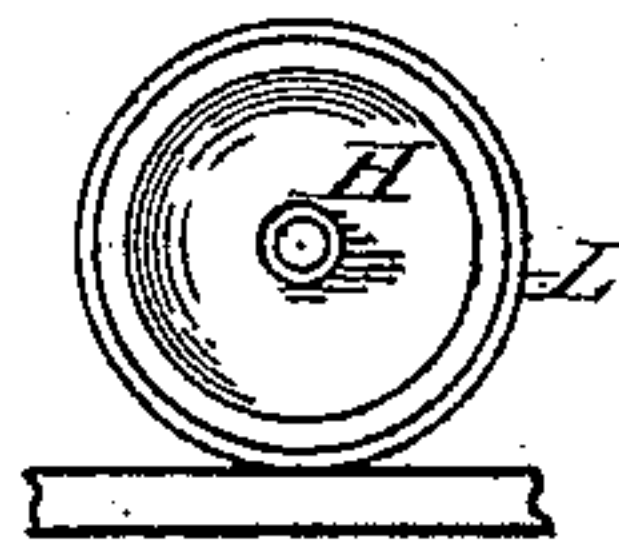


Fig. 4.

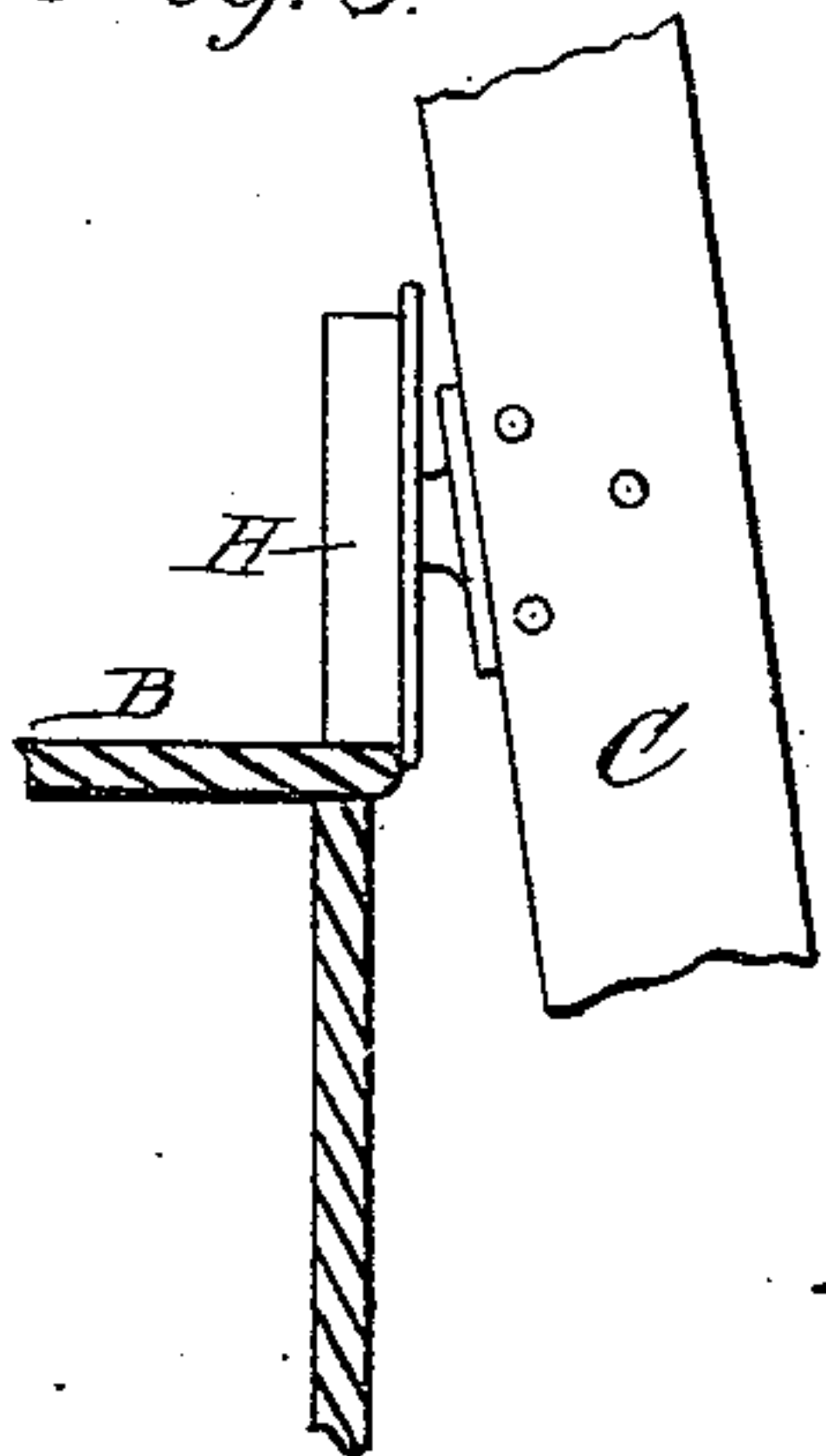


Fig. 5.

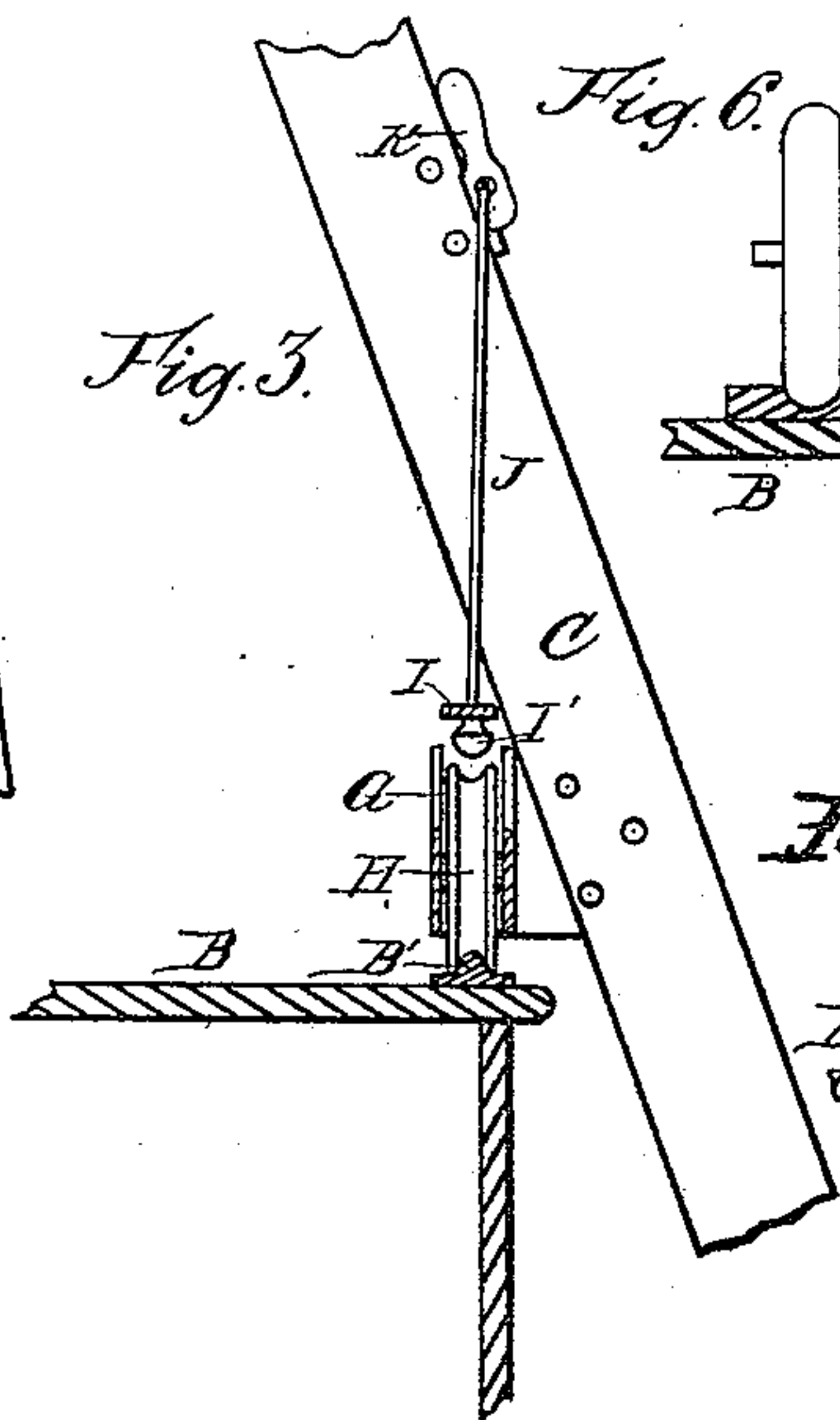


Fig. 6.

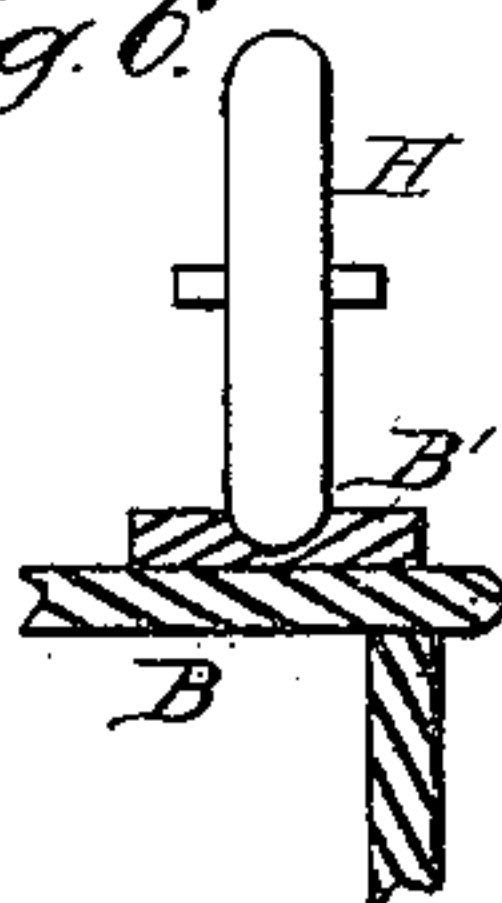


Fig. 7.

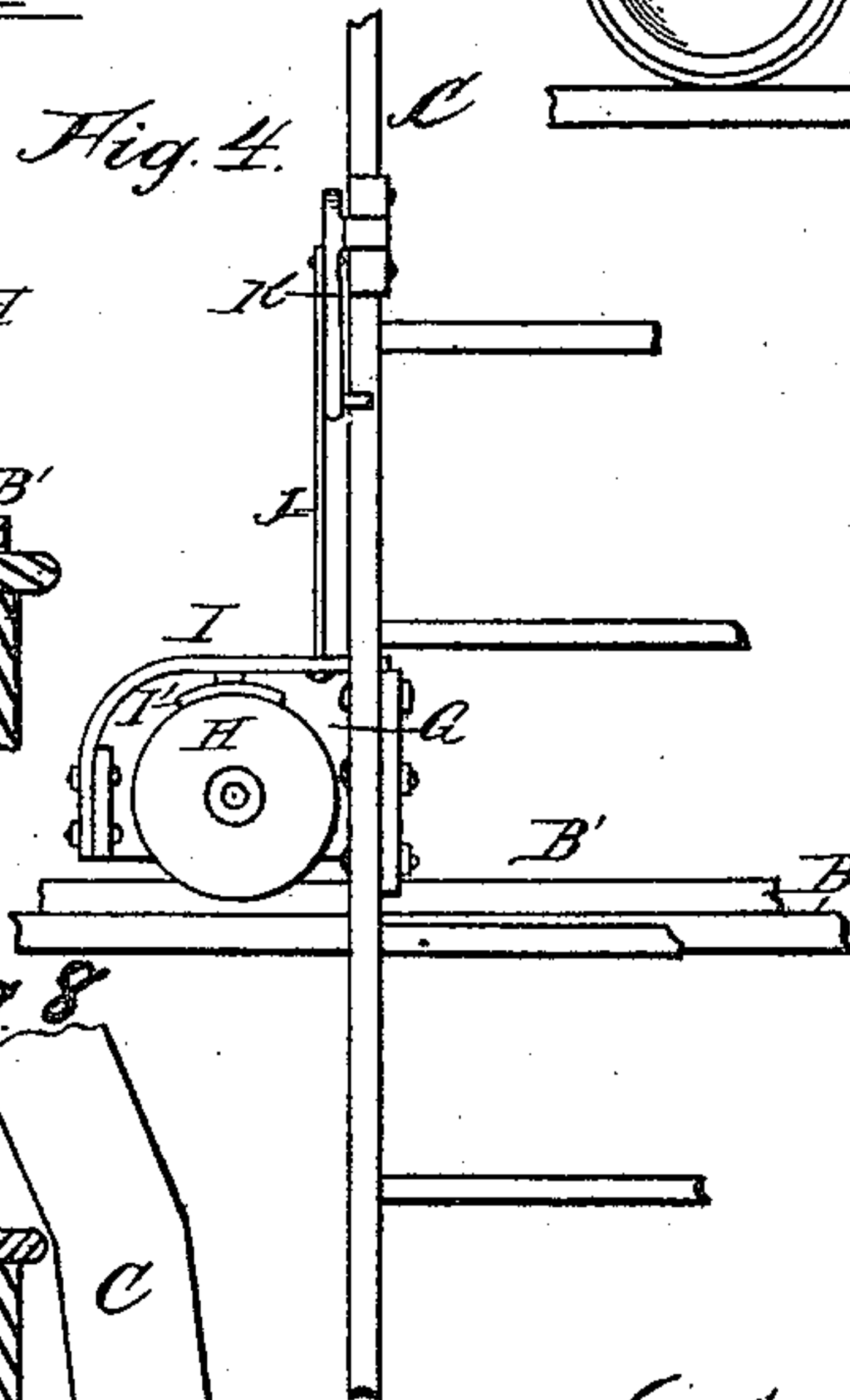
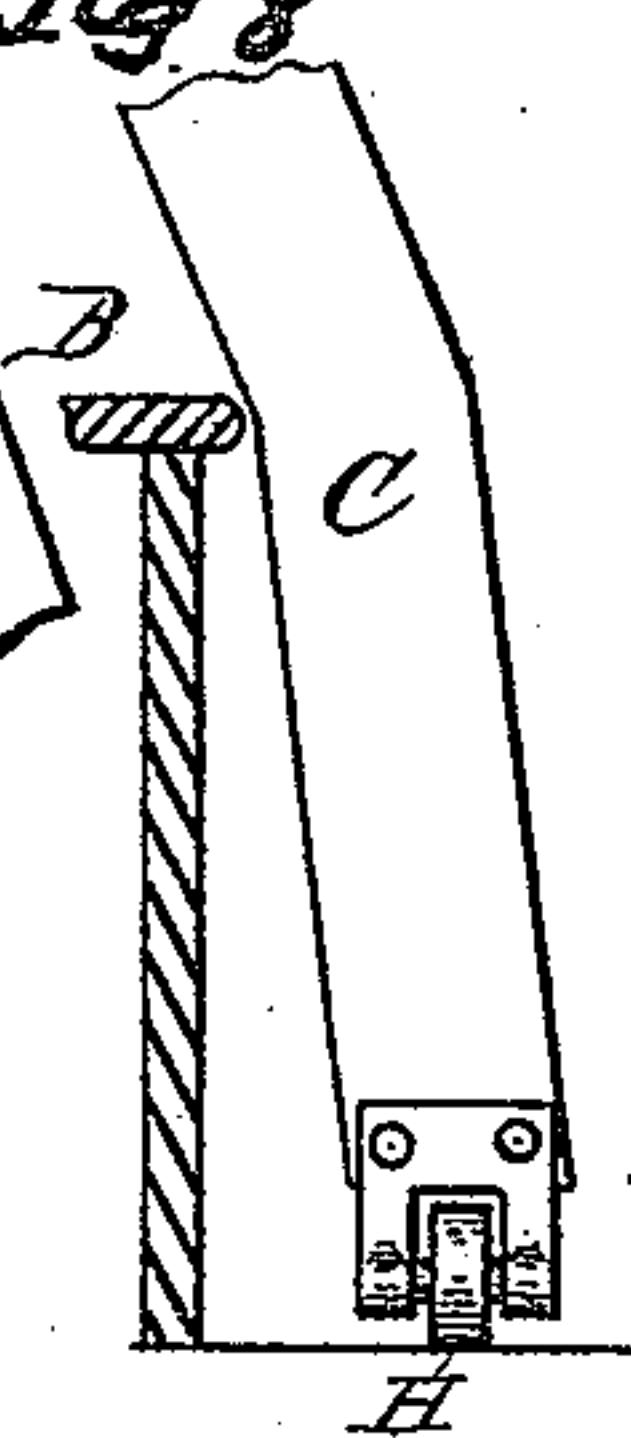


Fig. 8.



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# UNITED STATES PATENT OFFICE.

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## STORE-SERVICE LADDER.

SPECIFICATION forming part of Letters Patent No. 442,531, dated December 9, 1890.

Application filed May 31, 1890. Serial No. 353,795. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD M. MURRAY, a citizen of the United States, residing at Davenport, in the county of Scott and State of Iowa, have invented certain new and useful Improvements in Store-Service Ladders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to ladders for use in stores, libraries, &c., where it is desirable to reach articles placed too high to be reached from the floor; and the object is to provide a step service combining neatness and cheapness in construction and having in view the greatest ease and safety, not only in ascending and descending with a load of objects, but also of propelling ladder and operator from one part to more or less distant parts of the room. These objects are attained to a high degree in the construction, which I claim to be novel, of reversing the customary order of having the travelers and bearings at the top and the guide-bearings at or near the bottom of the ladder, whereby the travelers are placed beneath and near to the weight of the operator, and in a large degree the guide-bearings are relieved from the weight of the operator.

The invention further consists in providing a brake for the travelers, thus making a secure immovable base for the ladder when desired.

In the accompanying drawings, forming a part of this specification, Figure 1 is a front elevation of a device embodying my invention. Fig. 2 is a side elevation of the same, the base and pole or guide-rod being in section. Fig. 3 is a fragmentary side elevation, partly in section, showing the construction of the brake. Fig. 4 is a fragmentary front elevation showing the mounting of the travelers and the arrangement of the brake. Fig. 5 is a fragmentary side elevation showing a modified form of traveler. Fig. 6 shows another modification of the same and its track; Fig. 7, a side elevation; and Fig. 8 is a fragmentary side elevation, showing the traveler

mounted at the lower end of the ladder, so as to run on the floor.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a common style of shelving as used in stores, libraries, &c., and B the projecting base-shelf thereof. On suitable posts or columns A' is mounted by brackets E E a horizontal pole or guide-rod D, which may be of wood or metal, (preferably tubular,) as desired.

C is a ladder provided with hooks F F, engaging loosely the guide-rod. It will be seen that the inner ends of these hooks pass a little below the center of the guide-rod, so that there is no possibility of their being tilted out of engagement with said guide-rod by the operator stepping on the ladder below the lower bearings. To allow for the free passage of the hooks along the guide-rod, that part of the bracket engaging with the guide-rod is made to encircle it somewhat less than half the circumference, as shown in Fig. 2.

To the lower part of the ladder are secured bearings G G, and in these are mounted travelers H H. These bearings, as will be seen, extend laterally from the ladder, the extent thereof being as much as may be desirable to give stability to the ladder against tilting sidewise.

In the drawings various forms of travelers are illustrated. Thus in Fig. 3 a grooved traveler is shown running on a convex track B', secured to the base-shelf B. In Fig. 6 the reverse of this is shown, the groove being in the track. The preferred form for use in connection with the base-shelf is illustrated in Fig. 5, being a simple flanged wheel with a flat tread to run on the top of the shelf or on a flat track. (Not shown.) The purpose of the flange is to prevent the ladder from crowding inwardly against the edge of the shelf, as it has a tendency to do. To prevent marring and undue wear of the top of the shelf in case the track with a hard durable surface is dispensed with, and also to deaden the sound which might arise from the movement of the ladder back and forth, the traveler is preferably tired with some non-sonorous and slightly



yielding material, as rubber, leather, compressed paper, or the like.

To hold the ladder firmly in position when occasion requires, it is desirable to provide the travelers, or one of them, with a brake. This is illustrated in Figs. 3 and 4. This consists in a spring I, secured to the bearing or box G and provided with a suitable shoe I', conforming to the tread of the wheel. To the free extremity of this spring is connected a rod J, pivotally connecting at the other end with a pivoted hand-lever K, suitably mounted at the side of the ladder. The natural tendency of the spring is to press the brake-shoe into engagement with the wheel, and thus prevent its turning. By throwing the hand-lever up past the center, as shown in Fig. 3, the brake is disengaged and automatically locked in that position.

In cases where there is no base-shelf or where for any reason it is desirable not to have the travelers operate on the base-shelf the ladder may be carried nearly to the floor and provided with travelers at the bottom to run on the floor, as shown in Fig. 8. The traveler in this case may be of any of the forms described above, operating with or without a grooved or flanged track.

It will be seen that practically the entire weight of the ladder and its occupant is supported by the base-shelf or the floor, so that the guide-rod may be of comparatively light material, and the heavy iron track and brackets necessary in the case of a ladder suspended from the upper end are dispensed with. This construction also disposes the weight on the travelers at a point below the hand of the operator, so that in moving the ladder sidewise the hand is placed between the lower and upper bearings of the ladder and at a point where the resistance of such bearings is practically equal. The practical effect of this is to render the movement of the ladder very smooth and easy with no tendency to throw the ladder out of line and displace either traveler.

This invention, from the nature of the case, is applicable more particularly to ladders which are moved laterally in front of shelves and the like, and not to such ladders as are suspended from above and have travelers at the foot running on the floor, and adapted to carry the ladder forward and backward, considered with respect to the operator or the inclination of the ladder. In all such ladders the friction is necessarily so great that anti-friction rollers must be used above as well as below; but in this invention I dispense with rollers above, saving the expense of their manufacture and avoiding the annoyance due to the dripping of oil from their bearings. In the ordinary operation of the ladder the hooks at the upper end form no necessary part of the ladder's support, since

practically the whole weight is carried on the travelers at the bottom, the small proportion due to the inclination of the ladder being carried by the outer face of the guide-rod. Indeed, this inclination of the ladder as ordinarily used in stores, libraries, &c., is so inconsiderable that the weight, with the operator on the ladder, is practically balanced on the travelers, and the slightest possible strain is imposed upon the guide-rod or friction upon the upper bearings. I am therefore able to dispense with the costly rollers and the heavy fixtures commonly used for the upper bearings and use a simple light pole or rod and a hooked bearing on the ladder, which requires no oiling or other attention and is free from the objections before referred to. The hook itself need not even touch the guide-rod ordinarily; but it nevertheless serves the useful purpose of preventing the ladder from tilting outward or sidewise at the top.

The device, as will be seen and understood, is neat and attractive in appearance and of such a nature as to be quickly and cheaply applied to any place where it may be required.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a horizontal guide adapted to form a rest for the upper end of the ladder, of a ladder having hooked bearings near the upper end engaging said guide loosely to prevent tilting or displacement of the ladder, and travelers at or near the foot of the ladder, adapted to support the same and carry it laterally on the base-shelf or floor, substantially as described.

2. The combination, with a store-service ladder having travelers at or near the lower end, adapted to support the ladder on the base-shelf or floor, of a brake, substantially as described, adapted to engage with one of said travelers, and a hand-lever adapted to disengage the same.

3. The combination, with a store-service ladder, substantially as described, of the traveler H, spring-brake I, hand-lever K, and connecting-rod J.

4. The combination, with a suitable track therefor at or near the bottom of the ladder, of a ladder having travelers mounted on bearings extending laterally from the ladder, whereby the ladder is adapted to move laterally on a base-shelf or the floor and is the better protected against tipping sidewise.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD M. MURRAY.

Witnesses:

M. L. ELDRIDGE,  
J. M. ELDRIDGE.