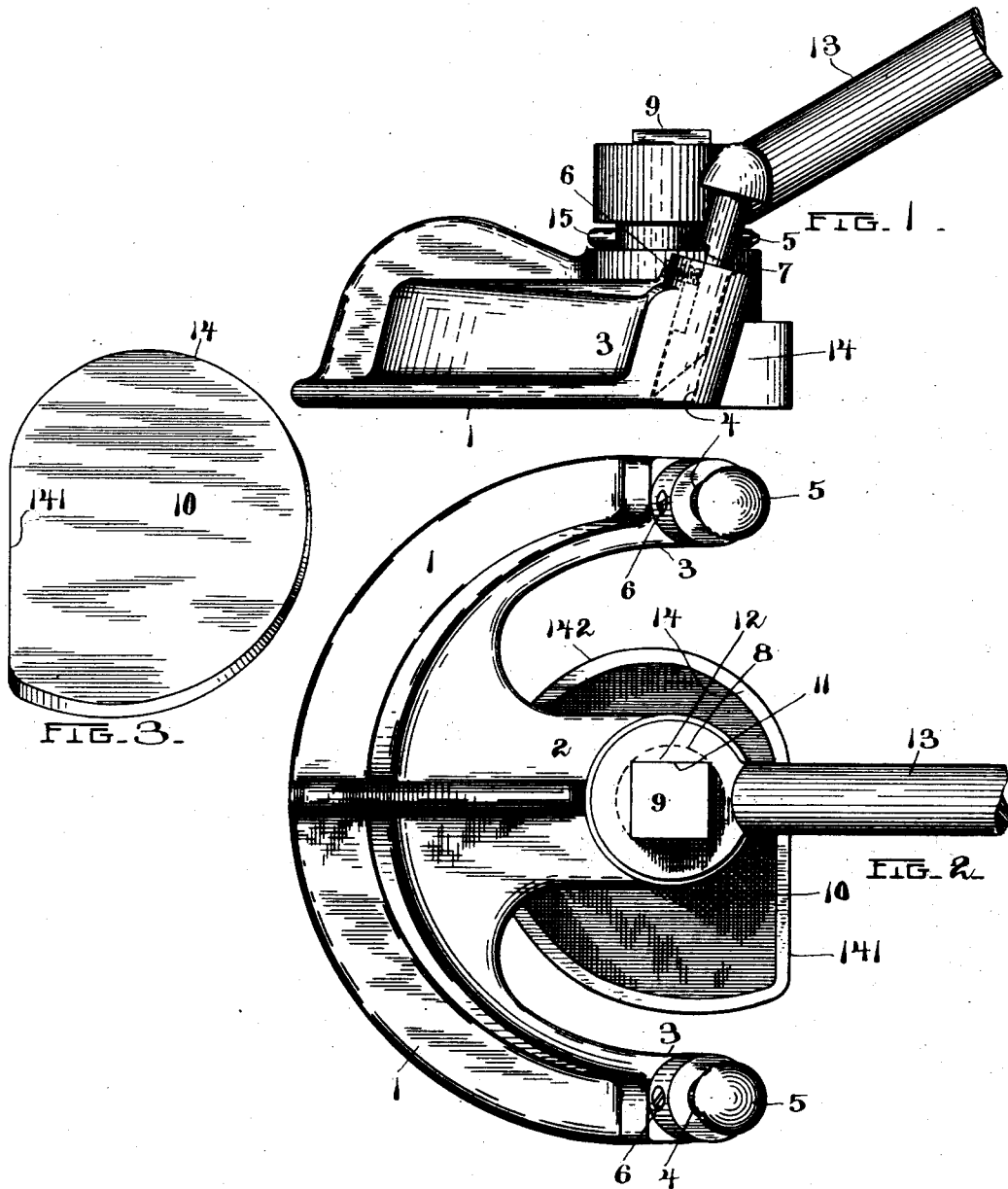


(No Model.)

J. W. SMITH & F. J. PERKINS.
FLOORING CLAMP.

No. 525,518.

Patented Sept. 4, 1894.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN W. SMITH AND FRANKLIN J. PERKINS, OF WOBURN, MASSACHUSETTS.

FLOORING-CLAMP.

SPECIFICATION forming part of Letters Patent No. 525,518, dated September 4, 1894.

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To all whom it may concern:

Be it known that we, JOHN W. SMITH and FRANKLIN J. PERKINS, the former a subject of Great Britain and the latter a citizen of the United States, residing at Woburn, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Flooring-Clamps, of which the following is a specification, reference being had therein to the accompanying drawings.

Our invention relates to the flooring clamps which are employed for closing up the joints of flooring boards by forcing the edges of the said boards together as they are laid.

Various forms of flooring clamps have been devised and used heretofore, but many of them are large and comparatively complicated contrivances, and the most of those with which we have become acquainted have proved deficient and unsatisfactory in various respects. They usually require so much room for their operation that quite a number of the flooring boards at the last cannot be laid except by removing and dispensing with the use of the said clamps, the said boards being forced into proper place by other means. Others are difficult to hold in place while being used, while in the use of most of them an unnecessarily and undesirably great amount of time is consumed in putting them in position, operating, and removing them to permit the laying of boards to be proceeded with.

The objects of our invention are to furnish a simple, strong, efficient and compact device, which shall remedy the disadvantages of prior forms of flooring clamps, and which shall be capable of being used until all but the last two or three boards have been secured in place with its aid.

We have represented in the accompanying drawings the best form of our device which has yet been devised by us.

In the said drawings, Figure 1 is a view of the said device in side elevation with a portion of the handle thereof broken away and removed. Fig. 2 is a view in plan showing the parts which are represented in Fig. 1. Fig. 3 is a view of the cam, inverted.

At 1 is a casting having a smooth under-surface fitted to rest upon the sub-flooring or other support on which the device is placed, the main part of the said casting being pref-

erably of the horse-shoe or crescent-like form most clearly shown in Fig. 2, it having an elevated projecting portion 2 midway between the two points 3, 3 thereof, and the said projecting portion 2 and points 3, 3, all extending in the same direction. Through the said points 3, 3 are formed the slanting or oblique holes 4, 4, the direction of the slant or obliquity of the said holes being rearwardly with reference to the points 3, 3. The said holes form sockets for the reception of pins 5, 5, which are free to slide up and down therein to a certain extent. For the purpose of preventing the accidental withdrawal of the said pins, the retaining screws 6, 6 are fitted to threaded holes which are made through the points 3, 3, the inner ends of the said screws 6, 6 projecting into the sockets 4, 4 and also into recesses 7, one of which is formed in the side of each of the pins 5. In addition to preventing the pins from being withdrawn from the holes 4, by coming in contact with the ends of the said recesses in the pins, the said screws 6, 6 serve by bearing against the flattened surfaces of the pins 5 in the said recesses 7 to prevent the said pins 5 from rotating in the said holes. The lower end of each pin 5 is cut away obliquely so as to form a point which is beveled at the forward side thereof, namely at the right hand side in Figs. 1 and 2. In the projection 2 is formed a vertical hole 8, the same serving as a bearing within which is fitted the upwardly projecting pin or journal 9 of the cam 10. The pin or journal 9 is held in the bearing of the projection 2 by means of a split pin 15 or the like passing through a hole in the pin or journal above the upper side of the said projection.

The upper portion of the pin or journal 9 is squared as at 11, see more particularly Fig. 2, or otherwise shaped to fit the correspondingly-shaped socket 12 formed in one end of the lever 13, the latter being of convenient length to enable the cam to be turned readily when using the device, as will be made to appear more clearly hereinafter.

The cam is formed with an acting surface 14 having a short straight portion 141 and a curved portion 142 which is of volute shape, the curve thereof being at first quite abrupt but becoming gradually less pronounced as

the surface gradually recedes from the center. The face of the straight portion of said surface is vertical, as in Fig. 1, but the face of the curved portion is beveled or oblique, as shown most clearly in Fig. 3, the slant or bevel being slight at first but gradually increasing in passing around the cam.

It will be observed that the pins 5, 5 are located on opposite sides of the axis of the cam 10 and at equal distances laterally from the said axis. Also, that a line passing transversely through the said axis will also pass through the centers or axes of the two sockets 4, 4 in which the pins 5, 5 are fitted. This arrangement of the pins with relation to the axis of the cam enables the device to remain firmly seated after the pins have been driven into the sub-flooring or other support of the flooring-clamp, notwithstanding the strain to which the device is subjected while being employed for the purpose for which it is intended, or inequalities in the surface on which the device may rest.

It has been proposed heretofore to provide a device for the same purposes as that shown in the drawings with three holding pins, one on each side and one at the rear, but with this old arrangement of the pins there was a want of steadiness which interfered with the satisfactory use of the device. This want of steadiness came from the fact that when the device was operated for the purpose of crowding the boards of a floor into place the greater portion of the resulting strain upon the device, and frequently all of such strain, would come upon the pin at the rear, the pins at the sides sustaining little or none of such strain. As will be obvious, under these conditions the effect would be to cause the lifting of the forward side of the device, and of the boards engaged thereby. The same will be the case whenever the pin or pins which secure the device from slipping backwardly are located at the rear of the axis of the cam. Therefore, we arrange the parts of our improved device so as to locate the lower ends of the pins 5, 5 in a line passing through the axis of the cam at right angles to the line of pressure. The slanting position of the pins 5, 5 secures a firmer holding than would be the case if the said pins were vertical, and causes them to assist in holding down the device when pressure is being exerted on the boards. As will be obvious, when such pressure is applied they will be caused to engage all the more firmly with the support into which their points are driven. In order to guard further against the lifting of the edge of the board being acted upon, in consequence of the pressure of the cam, we form the edge of the curved portion of the said cam so that it slopes or inclines vertically, with the upper edge thereof slightly overhanging the under edge, as shown clearly in Fig. 3. Thereby the edge of the said board is pressed downwardly.

As hereinbefore stated, the curve of the cam varies, it being comparatively rapid at

first so as to move the boards most rapidly at the outset when they are loosest and most easily moved, and being gradually decreased, so that as the boards become gradually forced more closely together the speed of the movement imparted thereto shall correspondingly decrease but with an increased advantage in the action of the cam owing to the conversion of time into power in its operation, as will be obvious.

Correspondingly with the gradual variation in the curve of the cam, the degree of slope or incline in the edge or face of the cam is increased, so that as the pressure of the said face or edge against the edge of the board becomes greater and greater by degrees the increased slant or incline of the face or edge shall with certainty assure the holding down of the edge of the board.

In the use of our improved flooring-clamp it is placed on the sub-flooring or some other support on which it is fitted to rest, closely adjacent to the last flooring board which has been laid, the cam being turned into the position in which it is represented in Fig. 2 so as to present the flat portion of the face thereof toward the edge of the said board, and it is fixed temporarily in such position by driving the points of the pins 5, 5, into the said sub-flooring or other support by blows of a hammer on the heads thereof. The pressure is always transmitted on a line passing through the axis of the cam at right angles to the line which passes transversely through the said axis and the centers of the holes 4, 4 and hence it results that no matter what may be the degree of compression to which the boards are subjected the hand of the workman may at any moment be removed from the handle or lever 12 without there being any tendency of the cam to move reversely in consequence of the re-action of the compressed boards. After the boards have been forced into place and secured the device may readily be lifted off the sub-flooring or other support, no special effort being required.

As will be obvious, the device may be used until all but the last two or three boards of a floor have been laid with its assistance.

We claim as our invention—

1. The improved flooring-clamp comprising the frame or casting 1 containing the bearing 8 and the oblique sockets 4, 4, located in a line transversely thereof, the pins 5, 5, placed in the said sockets and adapted to be driven into the support on which the device is placed, the cam 10 having the pin or journal 9 fitted to the said bearing, and the handle or operating lever 13, substantially as and for the purposes set forth.

2. The improved flooring-clamp comprising the frame or casting 1 containing the bearing 8 and sockets on opposite sides of said bearing; and provided with pins or studs loosely fitted to said sockets and adapted to be driven into the supports of the clamp for retaining it in position, the horizontal cam 10 having

the pin or journal 9 fitted to the said bearing and provided at its edge with a face for acting against the edge of a flooring board, the said face having the straight portion 141 and the curved portion 142 formed as a volute and with a gradually decreasing curve, and the handle or operating lever, substantially as described.

3. The improved flooring-clamp comprising the frame or casting 1 containing the bearing 8 and provided with pins or studs for retaining it in position, the cam 10 having the pin or journal 9 fitted to the said bearing and formed with a curved edge for acting against the edge of a flooring board, the said curved edge being made slanting or oblique to prevent the rising of the board, and the handle or operating lever, substantially as described.

4. The improved flooring-clamp comprising the frame or casting 1 containing the bearing 8 and provided with pins or studs for retaining it in position, the cam 10 having the pin or journal 9 fitted to the said bearing and provided at its edge with a face for acting against the edge of a flooring board, the said face having the straight portion 141 and the curved portion 142 formed as a volute and with a gradually decreasing curve, said

curved portion having a gradually increasing slant or bevel to prevent the rising of the board, and the handle or operating lever, substantially as described.

5. The improved flooring-clamp comprising the frame or casting 1 containing the bearing 8 and the oblique sockets 4, 4, located in a line transversely thereof, the pins 5, 5, placed in the said sockets and adapted to be driven into the support on which the device is placed, the cam 10 having the pin or journal 9 fitted to the said bearing and provided at its edge with a face for acting against the edge of a flooring board, the said face having the straight portion 141 and the curved portion 142 formed as a volute and with a gradually decreasing curve, said curved portion having a gradually increasing slant or bevel to prevent the rising of the board, and the handle or operating lever, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN W. SMITH.
FRANKLIN J. PERKINS.

Witnesses:

MILAN F. STEVENS,
CHAS. F. RANDALL.