

(No Model.)

J. B. LOW.
WOOD SCREW.

No. 296,982.

Patented Apr. 15, 1884.

FIG. 1.

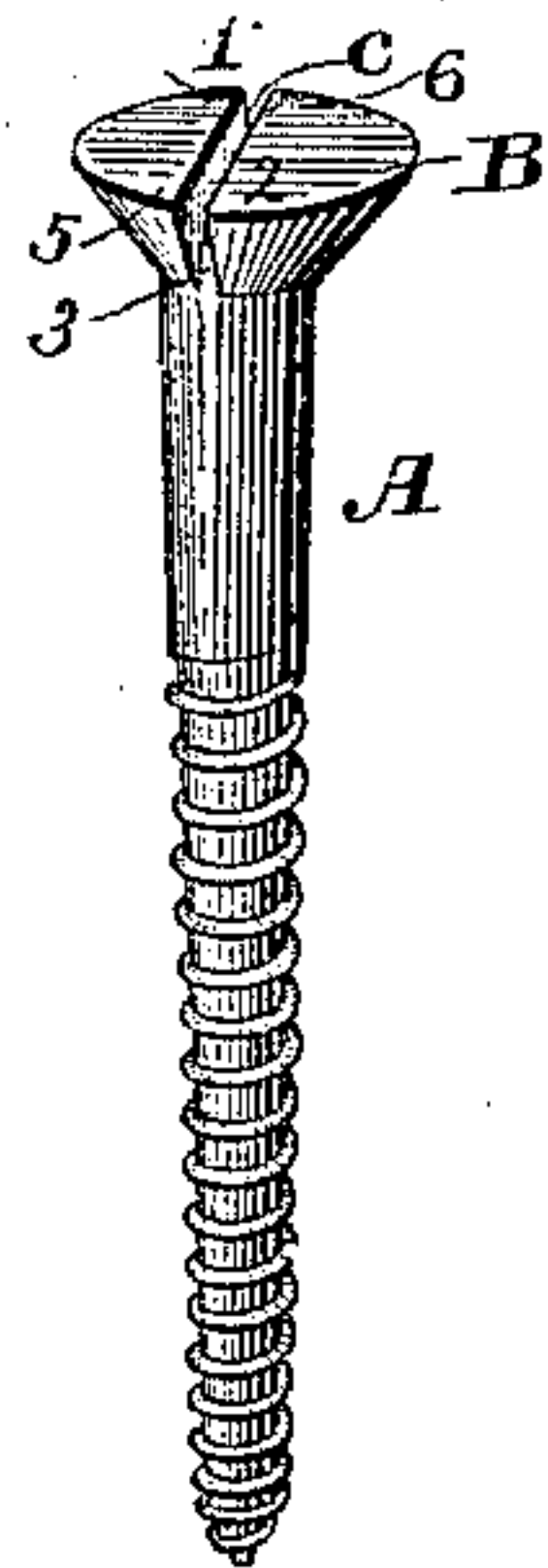


FIG. 2.

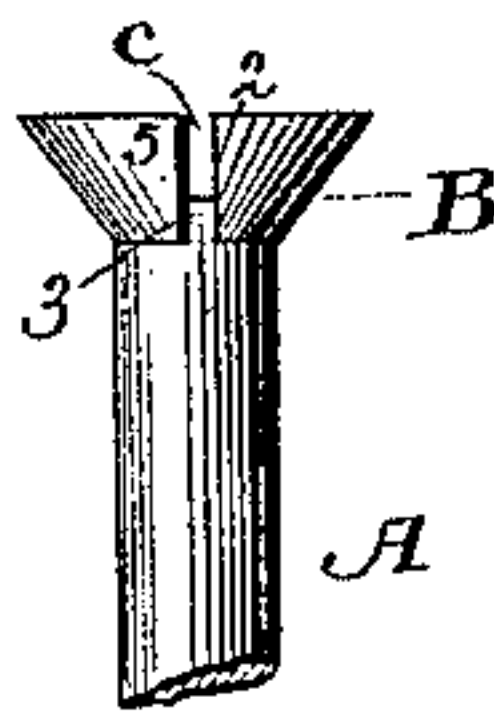


FIG. 3.

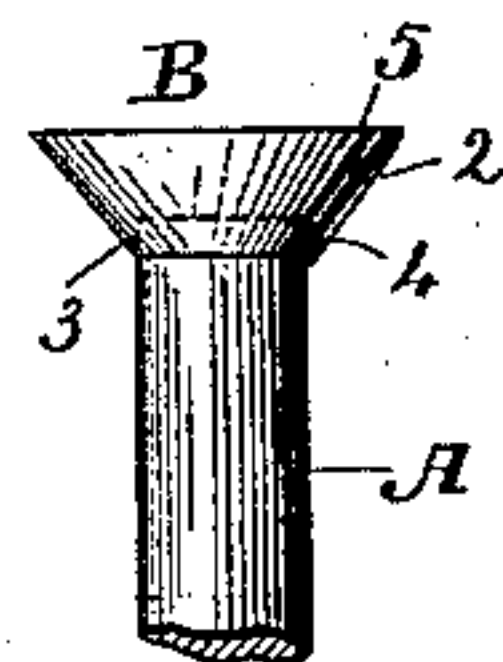


FIG. 4.

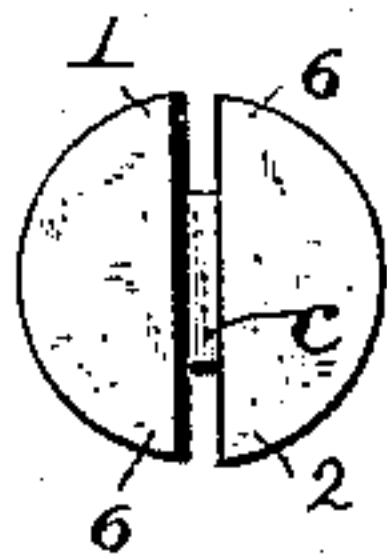


FIG. 5.

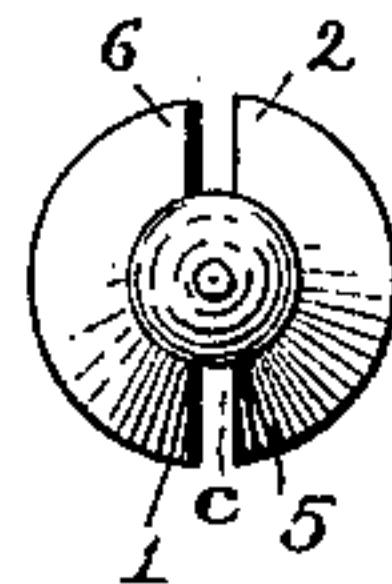


FIG. 6.

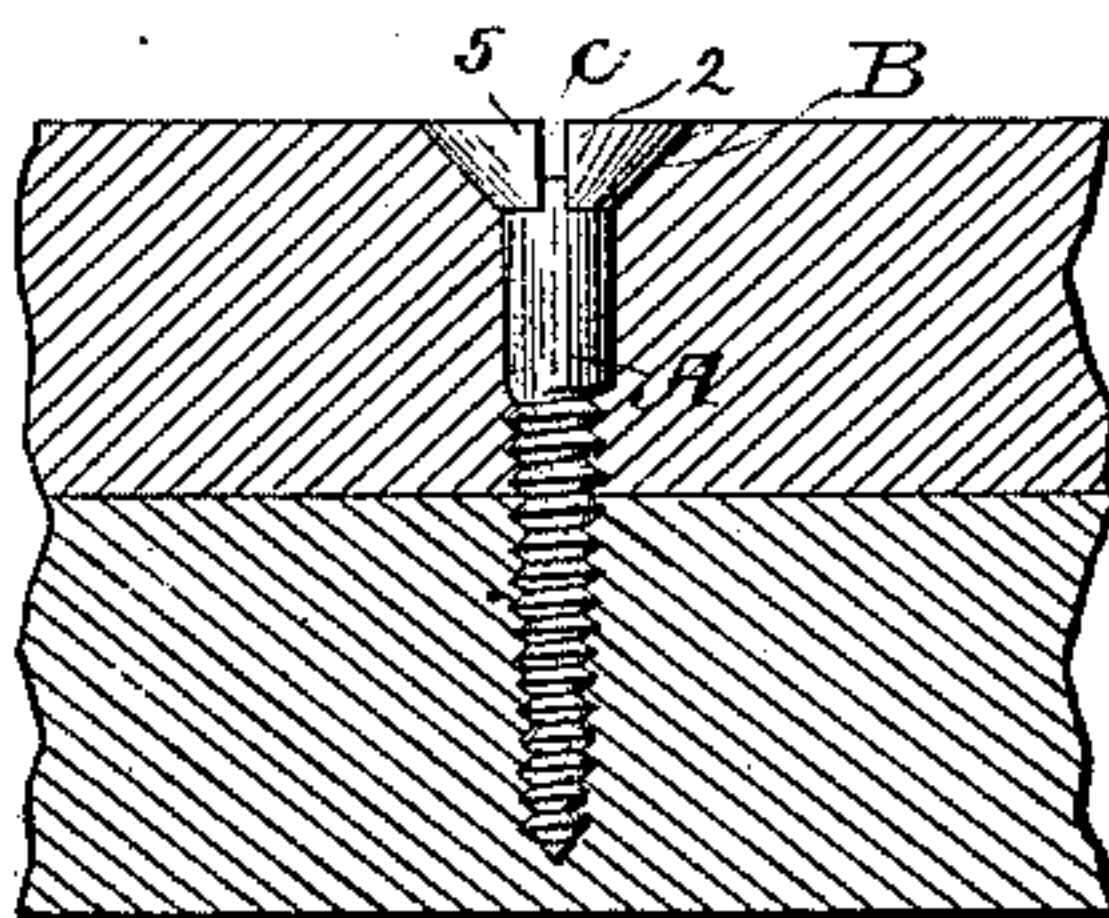


FIG. 7.

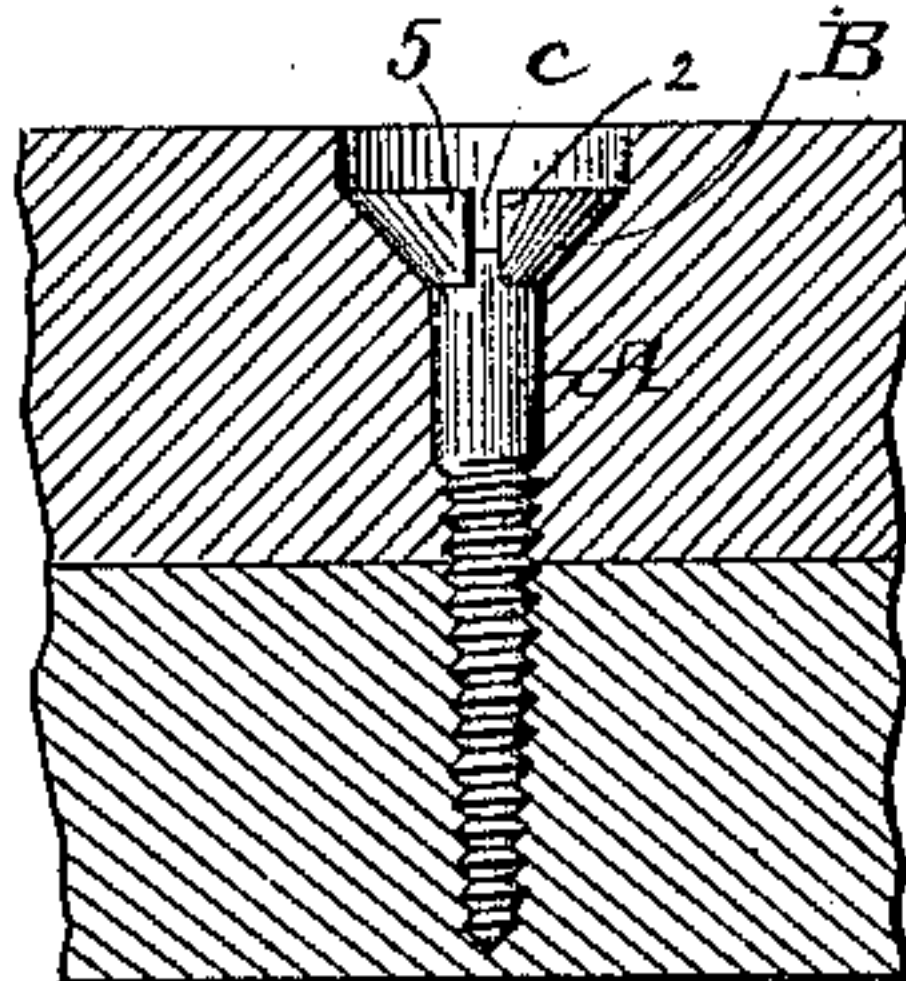


FIG. 8.

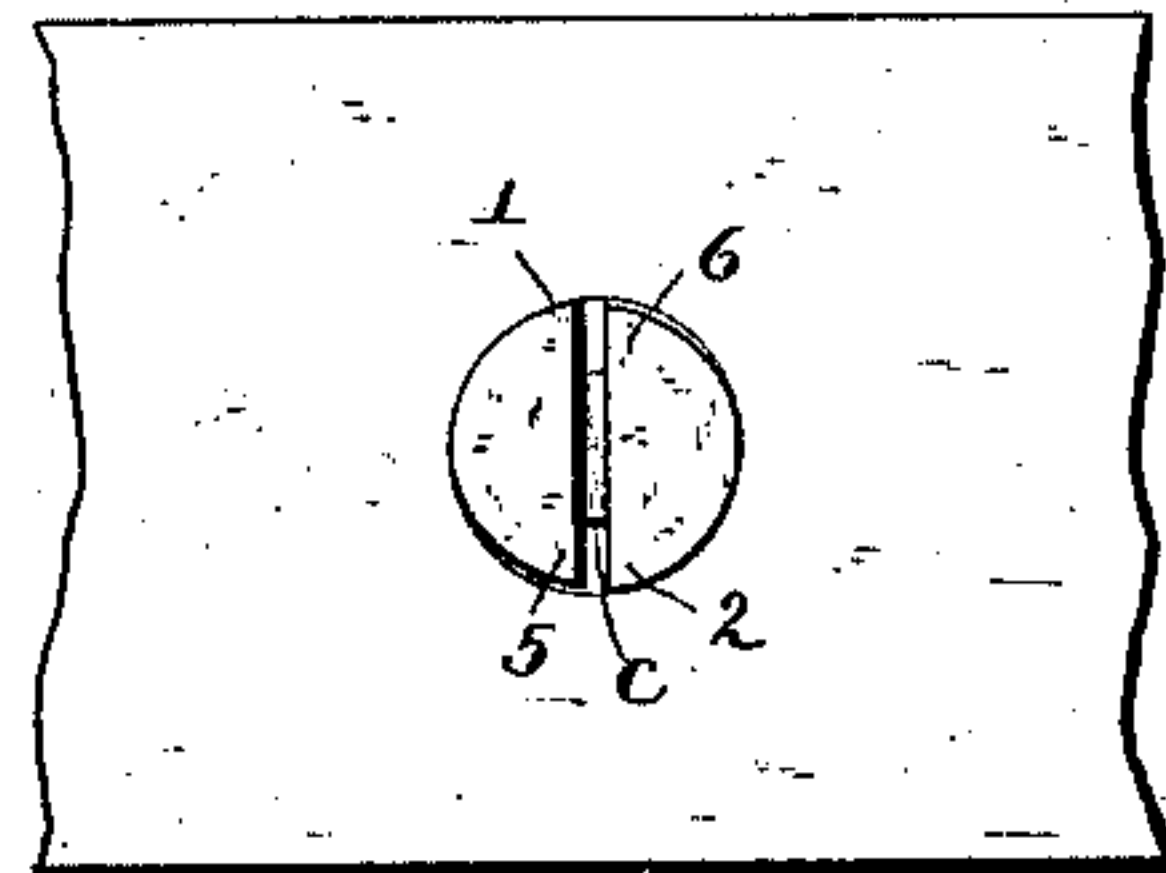


FIG. 9.

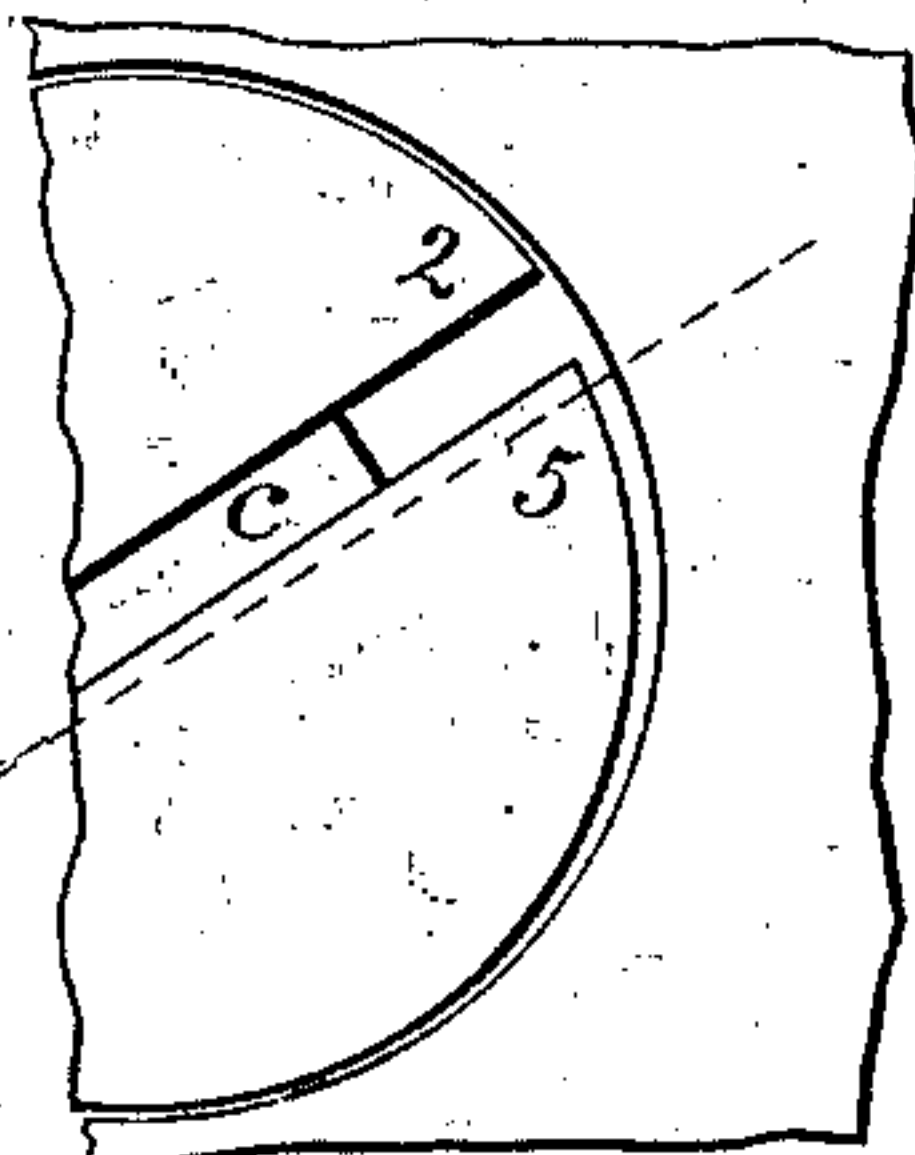
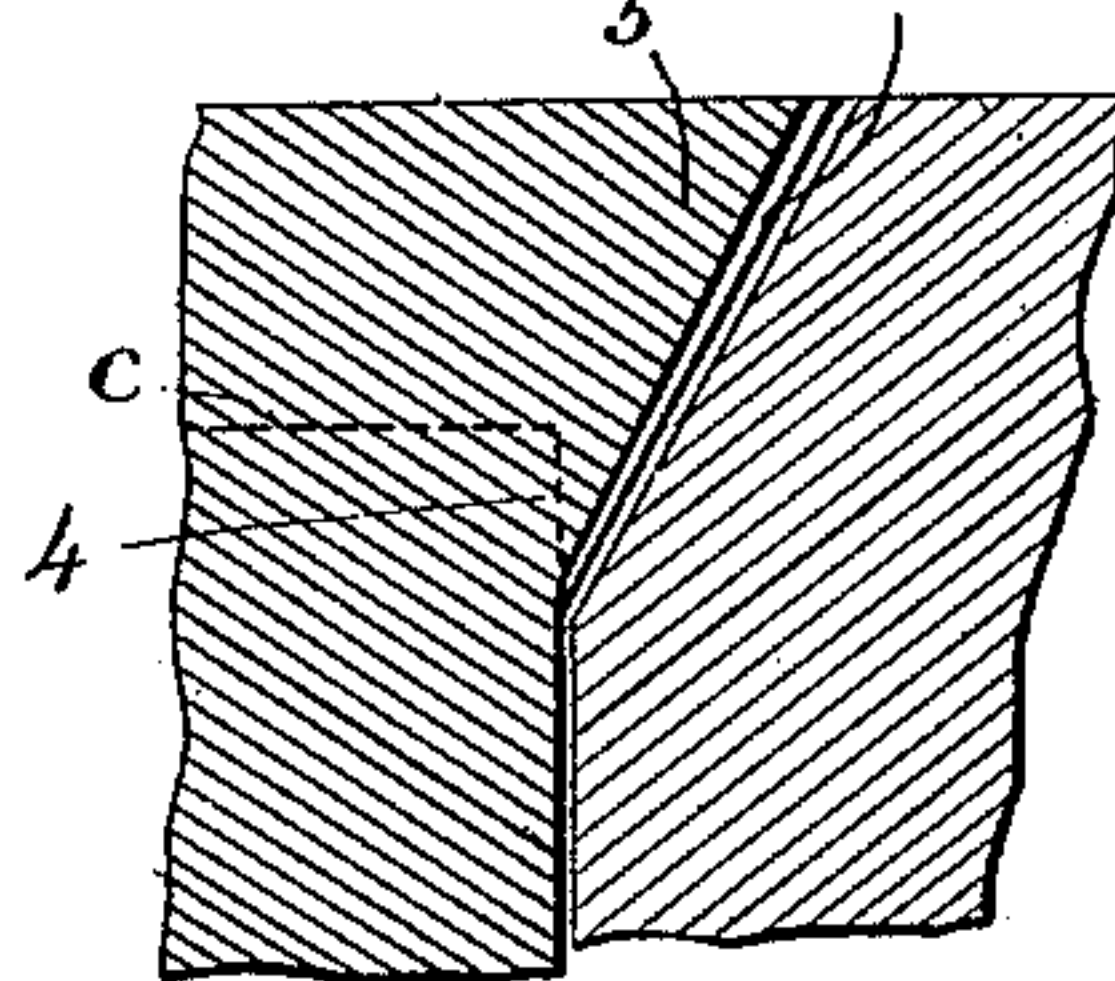


FIG. 10.



ATTEST.

J. Henry Kaiser
Jacob Felbel.

INVENTOR.

Jesse B. Low
By atty J. V. McIntire.

UNITED STATES PATENT OFFICE.

JESSE B. LOW, OF NEW YORK, N. Y., ASSIGNOR OF THREE-FOURTHS TO
GEORGE H. SEELEY, NATHAN SEELEY, AND JAMES H. TAYLOR, ALL
OF SAME PLACE.

WOOD-SCREW.

SPECIFICATION forming part of Letters Patent No. 296,982, dated April 15, 1884.

Application filed November 24, 1883. (No model.)

To all whom it may concern:

Be it known that I, JESSE B. LOW, of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Wood-Screws; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this application.

My invention relates to a new and useful improvement in wood-screws of that type or class in which the head part is provided with some sort of means to render it capable of countersinking itself into the wood into which the body of the screw may be driven.

Previous to my invention it has been suggested to make the heads of wood-screws so that they would cut their own way into the wood, and by the turning of the body of the screw, as the latter should be driven home, would be drawn down into the recess or receptacle thus cut in the stock, and so that the top surface of the head would either come flush with the surface of the piece of wood entered by the screw or be forced below such surface, as occasion might require; but in all kinds of self-countersinking screw-heads that I know of devised prior to my invention at least one of two serious objections has existed. Either the construction of the self-countersinking head has been such that the usual circular perimeter of the top surface of the head has been entirely destroyed, (in order to produce the cutting devices,) so that when driven home flush with the surface of the wood the perimeter of the head's top surface would not at all correspond to the circular shape of the depression cut for the reception of the head, thus causing an unsightly appearance to be presented, or the construction has been such that although the circular shape of the perimeter of the head's top surface has been retained perfectly unimpaired, the head has therefore been wholly lacking in capacity to cut its way far enough into the wood to effect the sinking of the top surface of the head below the surface of the wood, (to any material

extent,) which it is often desirable and even important should be done.

I propose by my invention to provide for use a screw with a self-countersinking head, which, while it shall in other respects be equally as desirable as, or more so than, any screw of this type heretofore constructed, shall possess the capacity to cut its own way into the wood to any extent to which it may be desired to countersink or embed the head in the wood, and which shall also have a head the perimeter of the top surface of which, although not exactly circular, is so nearly so that, whether the head be more or less countersunk, the perimeter of its top surface will always fit or match with apparent perfection the circular recess or depression cut by the head in the wood.

Of course I propose as minor objects of my invention greater combined ease of cutting action, simplicity of structure, perfection of finish, and facility for cheaply making the improved article than have been found in any form of self-countersinking screws heretofore made; but my invention may be said to consist, essentially, in a self-countersinking screw-head the tapering or frustumally-shaped portion of which is formed or provided with one or more cutting or reamer-like edges, and the top surface of which has a perimeter of substantially circular contour.

To enable those skilled in the art to which my invention appertains to make and use screws embracing it, I will now proceed to more fully describe my improvement, referring by letters to the accompanying drawings, which form part of this specification, and in which I have shown a screw having a self-countersinking head, and made according to my invention as I have so far practiced it, and in the best form now known to me for carrying out my said invention.

In the drawings, Figure 1 is a perspective view of an ordinary large-sized wood-screw embodying my improvement or invention. Fig. 2 is a side elevation of the same, viewed in line with the screw-driver nick in the head.

Fig. 3 is a similar view, but taken in a line at right angles to that in which the screw is viewed in Fig. 2. Fig. 4 is a top view or a face view of the head. Fig. 5 is a view, looking at the point of the screw, and hence showing plainly the under side or tapering portion of the screw-head. Figs. 6 and 7 are views showing the screw in elevation, and also showing in section a portion of some wooden stock secured together by the screw. Fig. 8 is a top or face view of what is shown in section at Fig. 6. Fig. 9 is a partial duplication of Fig. 8, but on a greatly exaggerated scale, for the purposes of illustration; and Fig. 10 is a similarly exaggerated view, showing in side elevation portions of the head and body of the screw.

In the several figures the same parts of the screw will be found designated by the same letters.

A is the body portion, and B the head, of a large-sized ordinary "gimlet-pointed" wood-screw having my invention added or applied to it. There are, as shown, two cutters or cutting-edges, 1 2, to the head B, which being formed, as shown, at those localities at which the ends of the ordinary screw-driver nick or cut *c* intersect the circular perimeter of the top surface of the head, said perimeter is not broken or mutilated any more than usual at these points. In the case shown these cutters or cutting-edges 1 and 2 have been produced by simply taking an ordinary wood-screw such as now in the market, and making a slight vertical cut-away on the lower tapering part of the body and at each end of the nick *c*, as plainly shown at 3 4, (see Figs. 2 and 3,) and, furthermore, by then filing or otherwise cutting away the tapering surface of the head along the line of two of the four edges that are thus formed of lengths (each) equal to the tapering portion of the head, and for a short distance back of such two of said edges, as seen at 5 and 6. (See Figs. 3, 4, 8, 9.) In lieu, however, of thus forming the cutting-edges 1 and 2, these edges may be formed by simply deepening the drive slot or nick *c* down to the lowermost part of the tapering head, in which case the entire edge of each of the cutters 1 and 2 will be formed by the intersection of the wall of the nick *c* and the tapering surface of the head's body portion. The cutting away thus of two of the four edges thus formed in pairs at opposite parts of the tapering portion of the head brings these two edges 5 and 6, it will be seen, slightly within or nearer to the axial line of the screw-body than the other two edges, 1 and 2, and the relationship of the edges mentioned is such at each end of the nick *c*, it will be observed, that in the rotation of the screw, for the purpose of entering it and driving it home, the bearing-edges 5 and 6 will lead or travel always in advance of the cutting-edges 1 and 2. By reason of this set-back of the edges 5 and 6 the cutting-edges are enabled to take a bite into

the wood to be reamed or cut out, and the depth to which these cutting-edges can cut is restricted and regulated perfectly by the degree or extent of this set-back of the edges 5 6. This is an important and desirable feature of the construction shown, since thereby the possibility of cutting too "rank"—which might occur were the cutting devices not immediately led by a bearing-surface incapable of cutting the stock, and which can occur in that form of self-countersinking heads heretofore known, in which there was no portion of the perimeter of the top surface of the head that could act as a bearer on the wood and a stop to the cutter—is avoided. As the two cutters remove the stock in the operation of reaming out the screw-hole for the countersinking of the head, the chips or bore-dust escapes easily through the ends of the cut or nick *c*, which form throats or exit-passages for the free discharge of the cuttings.

The leading and bearing surfaces or edges 5 and 6, before alluded to, which travel in advance of the cutting-edges 1 and 2, bear hard on the surface of the tapering seat being cut in the wood, so that no dust can get between said surface and said bearing portions 5 6, and as the head gets down about flush with the surface of the work, and after it may have been made to cut into the wood below the surface, these escape-passages through the nick *c* afford a ready means of egress for the cuttings, that might otherwise impede or clog the free working of the reamer-like self-sinking head.

In the views shown at Figs. 9 and 10, where I have exaggerated the actual sizes of the parts for the purpose of making it more perceptible visually, will be clearly seen the difference between the distance of each cutting-edge 1 and 2 from the axial center of the head, and that of each leading and bearing edge or portion 5 and 6 from the same point. Here, also, will be seen best the projection of the cutting-lips beyond the bearing-edges and the discrepancy between the shape of the perimeter of the screw-head and that of the top edge of the recess or countersink cut in the wood, while an observation of Fig. 6 will show that this discrepancy, even in about the largest-sized wood-screw usually manufactured and sold, is not enough to be noticeable, and that therefore while the construction is such that a perfectly efficient reamer-like device is formed, the screw-head will, to all appearances, have its head circular at the top surface, and will practically conform or fit to the circular depression formed for its seating. This appearance is of considerable importance in all cases in which the screw may have its head driven home only far enough to have the top surface of the head come about flush with the surface of the material into which the screw may have been driven; and it will be understood, of course, that this desirable end was impossible of accomplishment in the use of that form of self-countersinking screw-head

heretofore known, in which the perimeter of the head was cut into zigzag shape, in order to produce a series of deep saw-tooth-like cutting devices capable of reaming out the wood, and of also freeing themselves of the cuttings or bore-dust.

It will also be understood that although the perimeter of the top surface of my improved screw-head is to all appearances circular, it has in reality the points coincident with the upper end of each of the cutting-edges 1 and 2 projected beyond the opposite bearing-points of the edges 5 and 6, and that therefore my improved head, unlike self-countersinking heads heretofore made, of that form in which a perfectly circular shape to the perimeter of the top surface was retained, is capable of cutting its way down into the wood to any desired extent. The fact that the projecting cutting-points of the edges 1 and 2 have intervening between them and the bearing-points, at the upper ends of the edges 5 and 6, the open spaces caused by the presence of the screw-nick *c*, renders less perceptible the fact that the first-named points are slightly farther from the axial line of the screw (or, in other words, from the center of the top surface of the head) than are the last-mentioned points. Were the metal or stock between these points at the perimeter of the screw-head not removed, there would appear a sort of notch where the cutting-point projects beyond the bearing-point at each pair of edges 1 2 and 5 6, and the actual projection, though not necessarily great, would then be more perceptible.

In view of the considerations just stated, it is therefore desirable to have the two pairs of edges 1 2 and 5 6 located where the ends of the cut or nick *c* of the ordinary screw-head are located, for reasons other than that previously stated—namely, in order that a free egress of the clippings may be permitted.

Having now so fully explained the construction and operation of a screw made according to my invention that those skilled in the art can practice the latter, and wishing it to be understood that though adapted mainly for use in connection with what are known as "wood-screws," my invention can with advantage be employed on other kinds of screws, and those having both bodies and heads of different sizes and shapes from what I have shown in the drawings, what I claim as new, and desire to secure by Letters Patent, is—

A self-countersinking screw-head having the cutting edges or devices composed of those two of the ends of the drive-slot walls which project throughout their entire lengths from the shank to the periphery beyond the opposite edges of the drive-slot walls, substantially as shown and described.

In witness whereof I have hereunto set my hand this 20th day of November, 1883.

JESSE B. LOW.

In presence of—

M. H. SMITH,
EDW. BLEZARD.