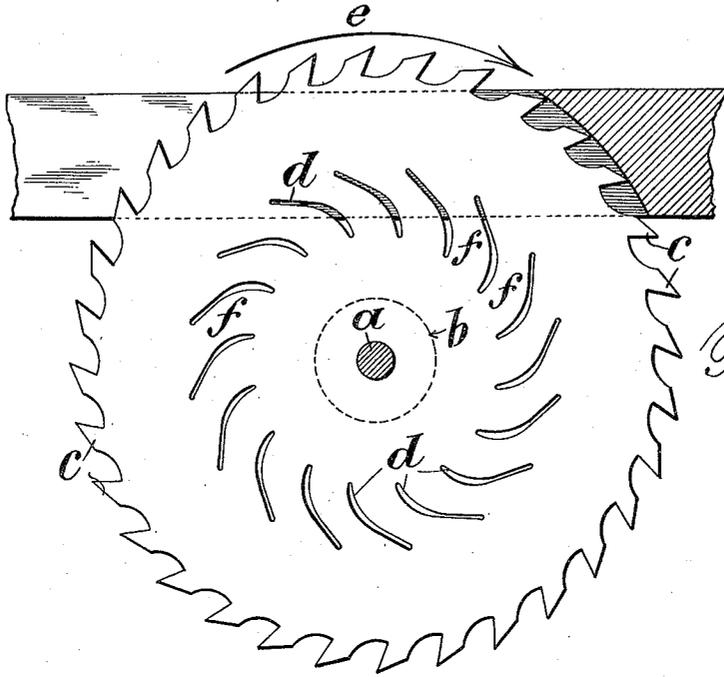


J. WETTSTEIN.  
CIRCULAR SAW BLADE.  
APPLICATION FILED SEPT. 23, 1912.

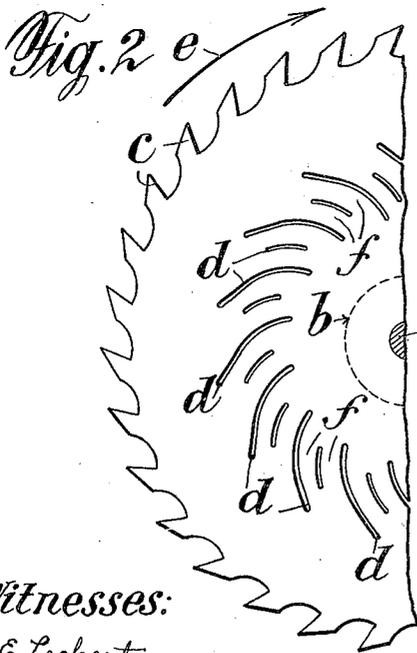
1,083,645.

Patented Jan. 6, 1914.

2 SHEETS-SHEET 1.

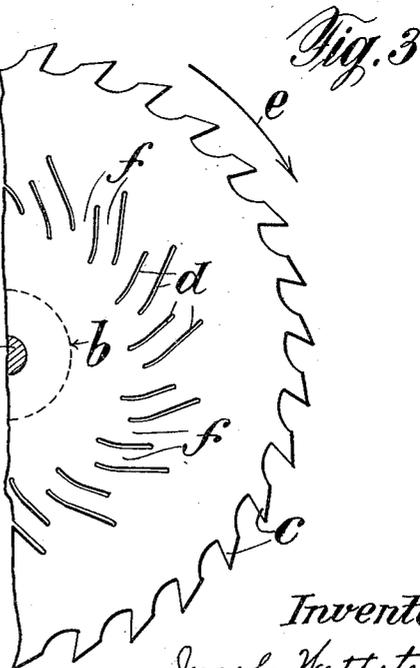


*Fig. 1*



*Witnesses:*

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M. G. L. Higgins.*



*Inventor:*

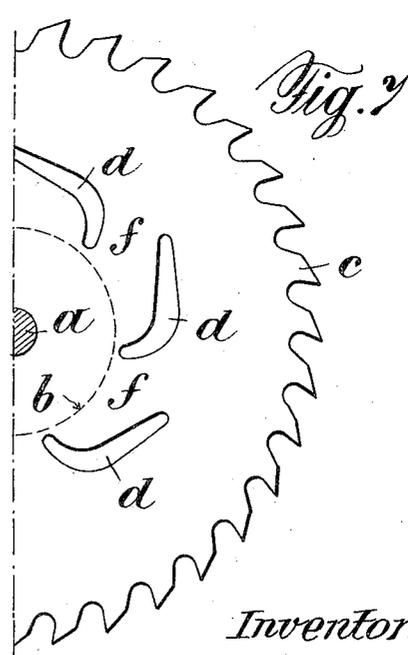
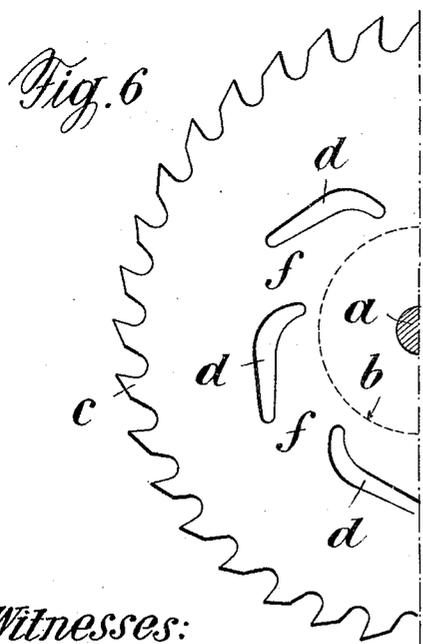
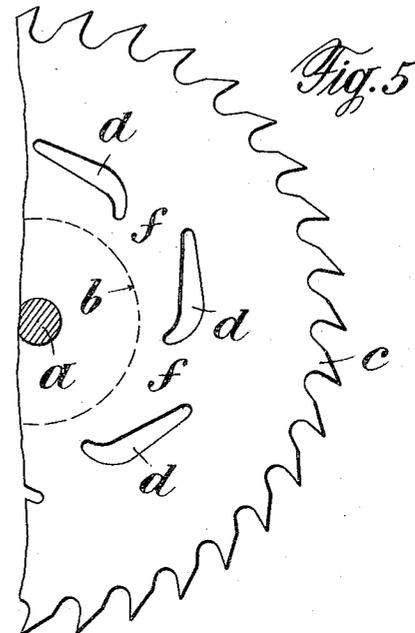
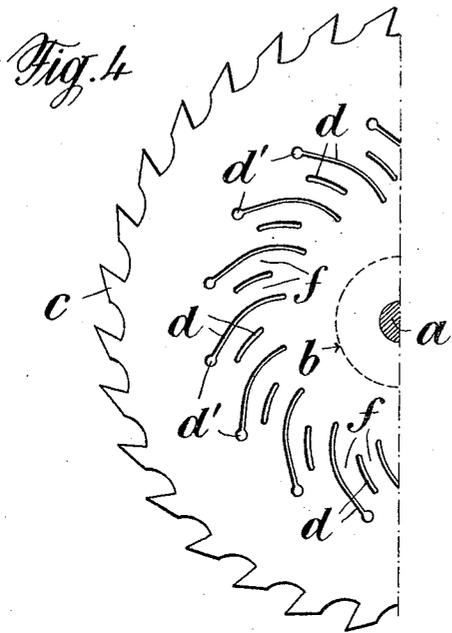
*Jacob Wettstein  
By Henry Orth atty*

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2 SHEETS-SHEET 2.



Witnesses:

E. Leckert.  
 M. J. L. Higgins.

Inventor:

Jacob Wettstein  
 By Henry Orthoff  
 Atty.

# UNITED STATES PATENT OFFICE.

JACOB WETTSTEIN, OF GREIFENSEE, SWITZERLAND.

## CIRCULAR SAW-BLADE.

1,083,645.

Specification of Letters Patent.

Patented Jan. 6, 1914.

Application filed September 23, 1912. Serial No. 721,918.

*To all whom it may concern:*

Be it known that I, JACOB WETTSTEIN, a citizen of the Republic of Switzerland, residing at "Zur Säge," Greifensee, Switzerland, have invented certain new and useful Improvements in Circular Saw-Blades; 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to that class of circular saw-blades in which perforations are provided in the intermediate part between the center and the toothed edge of the blade.

Circular saw-blades of this type have previously been proposed and the purpose of their perforations is to diminish or to neutralize the undesired expansion due to heating produced by the lateral friction of the saw-blade in the kerf. But this purpose is not completely attained and by the form of these perforations the most sensitive part of the saw-blade at the edge of the supporting clamps is weakened. If the saw-blade is strained too much when used and if the teeth are not quite uniform the blade is driven away from the straight direction and takes a wrong course. The running out of the saw-blade from the true working path begins at the edge of the clamps and takes place in a radial direction and after a blade has run out it will never return in the true working path, as is the case with frame saws or band saws. By this reason large saw-blades must always be made strong whereby increased power is required and relatively large loss due to cutting is caused. In order to remove these drawbacks according to this invention the perforations are shaped so that the parts of the saw-blade between the perforations form curved spokes which are directed approximately radially in the inner part and from there pass backward in tangential direction with regard to the direction of rotation, for the purpose of transmitting the driving force from the center of the blade to the toothed edge by an as much as possible tangential pulling action.

In the accompanying drawing several forms of construction having perforations of different shapes according to this inven-

tion are illustrated by way of example, Figure 1 showing a complete saw-blade and Figs. 2 to 7 portions only of saw-blades.

In all illustrated constructions the perforations  $d$  are located in the intermediate part between the center and the toothed edge and the perforations are shaped so, that the parts  $f$  between them form curved spokes which are directed approximately radially in the inner part and from there pass backward in tangential direction with regard to the direction of rotation  $e$  of the saw-blade (Figs. 1 to 3).

The perforations  $d$  may be made either all of equal length, arranged all at the same distance from the center of the blade and made somewhat wider in the inner than in the outer portion as shown in Fig. 1. Or they may be arranged at different distances from the center and alternately of different length, but always of the same width as shown in Figs. 2 and 3. In order to facilitate manufacturing the outer ends of the perforations may be enlarged at  $d'$  if the pitch is chosen so that the blade is not weakened (Fig. 4).

In the constructions according to Figs. 1 to 4 the perforations  $d$  are formed by relatively narrow slots, but they may also be formed by wider slots which are widened about their center portion (Figs. 5 to 7). In this case the number of perforations is smaller than in the constructions shown in Figs. 1 to 4. The inner ends, that is to say the radial parts of the perforations  $d$  may be made short or long according to the diameter of the disk saw. In disk-saws of small diameters the length of the radial portions is preferably made small (Fig. 5), while in saw-blades of large diameters the length of the radial portions is larger, and in this latter case the inner ends of the perforations  $d$  are shown to be situated close to the edge of the clamps  $b$ .

By the rearward directed spokes  $f$  formed between the perforations  $d$  the force imparted to the saw-blade by the shaft  $a$  and the edge of the clamp  $b$  is not transmitted to the teeth  $c$  in radial direction, but the cutting part of the teeth, which is marked in Fig. 1, is held by a part of the blade which already has left the saw-cut and is out of the influence of the latter. The driving force is transmitted from the center of the blade to the toothed edge by an as much as possible tangential pull, whereby the tend-

ency of the cutting part of the teeth to remain in the direction of the cutting plane is increased. Moreover the spokes  $f$  acquire some elasticity which moderates the resistance of the teeth and therewith the large straining of the saw-blade circumference.

A deflection of the saw-blade if at all will now appear not so easily at the edge of the clamps as at the weakest portions of the spokes between the perforations  $d$ , and these portions will be caused by the tensile force to move back in the place of the imperforated inner portion between  $f$  and  $a$ . The disk-saws according to this invention can be made therefore thinner as it was possible before. They need less width of set, also less power and therefore a smaller loss due to cutting. The perforations also cause an increased ventilation at the saw-cuts and clean them from saw-dust. The perfora-

tions also prevent heating better than the above mentioned hitherto used saw-blades.

I claim:

A circular disk-saw having perforations of such shape that the parts of the saw-blade between the perforations form curved spokes which are approximately radial in the inner part and from there pass backward in tangential direction with regard to the direction of rotation, for the purpose of transmitting the driving force from the center of the blade to the toothed edge by a substantially tangential pull.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

JACOB WETTSTEIN.

Witnesses:

ERNEST FISCHER,  
CARL GUEVER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."