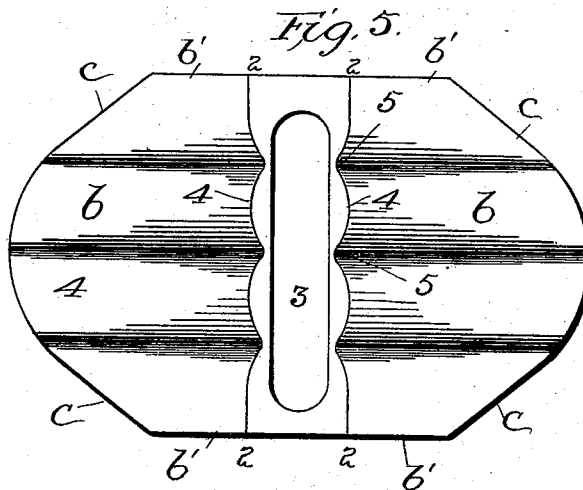
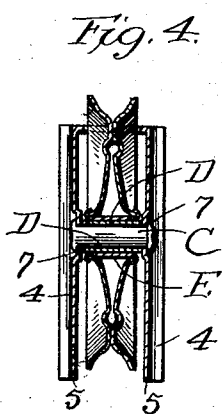
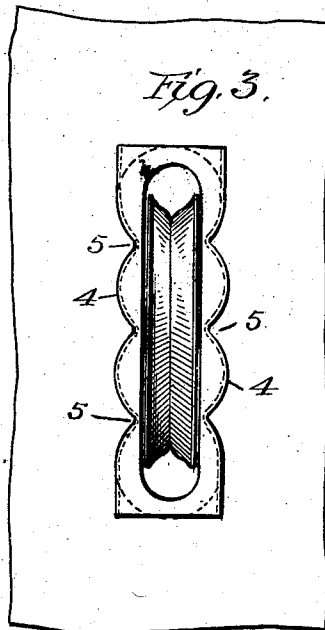
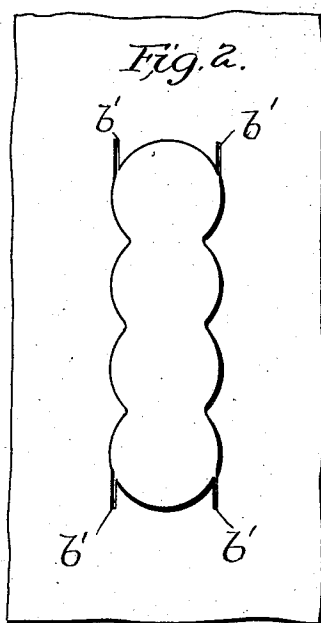
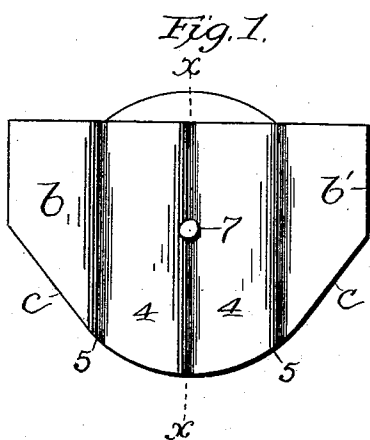


(No Model.)

W. R. FOX.
SASH PULLEY.

No. 506,684.

Patented Oct. 17, 1893.



Attest
Malvern Malletson
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Inventor
Wm R. Fox
by *Ellis Spru*
Att'y.

UNITED STATES PATENT OFFICE.

WILLIAM R. FOX, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR TO THE FOX MACHINE COMPANY, OF SAME PLACE.

SASH-PULLEY.

SPECIFICATION forming part of Letters Patent No. 506,684, dated October 17, 1893.

Application filed January 19, 1893, Serial No. 458,933. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. FOX, a citizen of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Sash-Pulleys, of which the following is a specification.

My invention relates to sash pulleys of that class in which the pulley is pivoted in a shell, and the whole adapted to be inserted in a cavity in the casing.

The invention consists in the special construction of the shell and in the means for supporting and pivoting the pulley therein. It is illustrated in the accompanying drawings, in which—

Figure 1, shows the device in side elevation. Fig. 2, is a front view of a section of a casing, with the holes bored to form the recess for the pulley shell. Fig. 3, is a front elevation of the pulley in place in the casing. Fig. 4, represents a section on line $x-x$ of Fig. 1. Fig. 5, shows the form of the sheet metal before bending the wings or walls.

I have sought to combine in a sash pulley and case, the qualities of cheapness, strength, durability and facility in fitting into place, together with neatness of appearance, and security when in place, without the aid of screws or nails. For these purposes I have selected at the outset sheet metal (preferably sheet steel) of the general characteristics, as those shown in the United States patent of Thompson of September 19, 1871. The side walls of my casing are formed as in that patent by bending the wings of the metal blank on each side of the central face part, to positions at right angles to said face. The thin sheet metal however, forms a comparatively weak wall, and, in order to strengthen it, and at the same time to fit it to a recess formed by boxing, I corrugate the wings, on lines at right angles to the plane of the face. Further, in order to secure the shell in the casing I form the walls plain at the ends, whereby they are fitted to cut into the wood, and thus hold the shell in place, without the ears such as those shown in the aforesaid patent of Thompson. The corrugations are located between these plain ends, and are so proportioned to

the transverse dimensions of the shell, across its face, that they will fit holes bored to intersect in the casing to form the mortise for the pulley and shell. An exterior form of the walls, shaped to fit bit-holes, however, is not new, having been shown in the United States patent of Vetterlein of December 12, 1876. But, by forming the sheet metal walls in corrugations the metal is strengthened, and the fit to the bit-holes secured at the same time. Further, the interior crests or ridges, between the swells being near the planes of the sides of the pulley, form the guiding faces for said pulley. As the construction requires no perforated ears at the ends of the face, a considerable percentage of metal is saved, in the manufacture.

Referring to the drawings the blank from which the shell is formed is shown in Fig. 5, the central part bounded by the lines 2—2 forming the face of the shell and in it is the slot 3, for the pulley. The wings $b-b$ are preferably cut to conform approximately to the contour of the pulley, but the curve does not start on the line 2—2, but outside that line, so as to leave straight edges b', b' , at the ends and corners c , shown in Fig. 1. The wings are bent to the position shown in Fig. 4. They are formed with corrugations 4, 4, on each side and with interior crests or ridges 5, between the swells or corrugations 4. The form shown is in proper proportion with two swells on each side, and three interior crests in the center. The holes 7, for the rivet which connects the walls and forms the journal for the pulley, are on the line of these central crests, so that the walls at those points are near to the pulley. These walls also at the ends or corners c , are plain and are fitted to cut directly into the wood. The recess for the shell is formed, as heretofore, by four holes bored through or into the casing, forming a cavity in length equal to the length of the face of the shell. The recess is therefore rounded at the ends. When the shell is inserted, the swells on each side fit the two bit-formed grooves, but the corners c , being formed of the straight or plain walls, cut into the wood, as shown in Fig. 3. These four corners are thin enough to admit being

driven in, and form a holding device as secure as screws and better than ears formed on the ends for screws or nails, as heretofore.

In order to connect and sustain the walls 5 and support the pulley I provide a rivet and quill bushing. The wheel shown is made of sheet metal and has a bearing sleeve E, but this may represent the bearing of any kind of wheel. Looking at Fig. 4, the quill sleeve 10 is seen at D. It may be made of sheet metal, preferably steel, and is of a length fitted to act as a strut and prevent the walls from collapsing. Preferably the walls are formed with depressions about the holes 7. These 15 make interior plain bearing faces for the ends of the sleeve, close about the holes. When in place a plain rivet C, is inserted and headed down. The use of the sleeve obviates the necessity of shoving the walls apart in 20 putting in a rivet with the ends turned down to form shoulders and the plain rivet and sleeve are much cheaper. The sleeve forms the bearing as well as distance piece between the walls.

In cast metal shells, having an exterior 25 fluted or corrugated surface, the shell, as a matter of course, is rigid and it is not possible practically to make them of exactly the same size, or true outline or smooth, and as 30 they are rigid, they cannot adjust themselves to the recess in the jamb. But the shell formed out of sheet metal, and in dies, may be made accurately and of perfectly uniform dimensions and of smooth surface. They may 35 thus be driven tightly in the recess, and by their elasticity the corrugated wings fit themselves to the corresponding walls of the recess, and fit snugly with strong frictional contact, so that all the strain upon the pulley is 40 transmitted to the walls of the recess in the jamb. The sheet metal casing should also be fitted to be driven more tightly since it may be so driven, by reason of its smoothness. The rivet has also a tendency to hold the shell 45 in the recess, by reason of the shell being

slightly yielding and having the greatest width at the rivet, and thus the shell is effectually prevented from going either way. The thin edges also of the sheet metal, may enter the wood, which is not practicable in 50 cast metal forms.

In the manufacture of such articles as pulleys and their casings made in large quantities a very small saving is of great importance, and this kind of saving is effected in 55 the sleeve which is not only cheaply made, as it may be rolled up from the same kind of sheet steel as that of the shell, but it also acts as a strut as well as a bearing, and by holding a part of the walls or wings, holds also the 60 shell more firmly in place.

I claim—

1. A shell for sash pulleys composed of a single piece of metal consisting of corrugated wings extending parallel to each other connected by an uncorrugated face plate having 65 an elongated central opening for the pulley, substantially as described.

2. A shell for sash pulleys composed of a single piece of sheet metal consisting of wings 70 and a face plate, said wings having plain ends adapted to cut into the wood and corrugations intermediate of said plain ends, substantially as described.

3. In combination with the shell having 75 openings in its sides, a rivet extending through the openings and having its ends upset against the walls of the shell, a hollow bushing of uniform diameter surrounding the rivet and bearing against the face of the shell walls to 80 prevent inward movement thereof and a pulley mounted on the bushing, substantially as described.

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

WILLIAM R. FOX.

Witnesses:

JOHN DUFFY,
EARL STOKOE.