Dec. 2, 1941. S. ROSENBERG 2,264,483

SASH ANCHORAGE FOR CHAINS

Original Filed Aug. 27, 1938

Fig. 1.

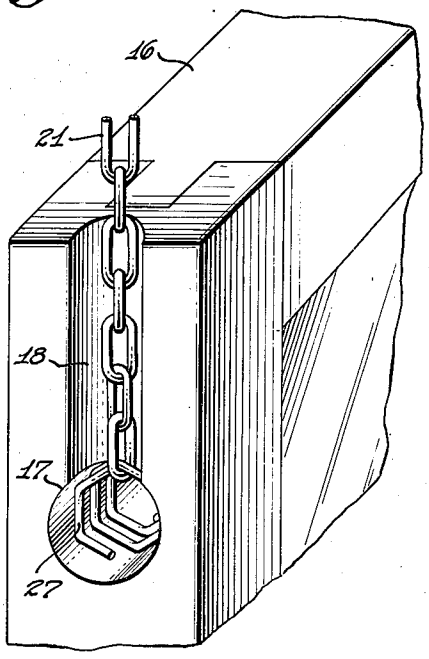


Fig. 2.

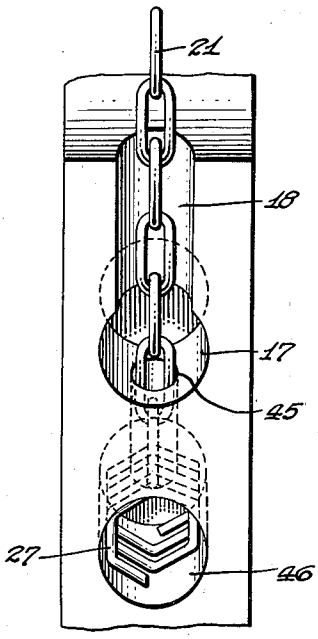


Fig. 3.

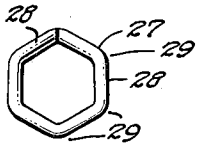
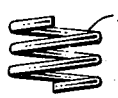


Fig. 4.



Inventors:

SAMUEL ROSENBERG, DECEASED,
BY GERTRUDE POUSMAN, ADM'X.
and THOMAS ROSENBERG.

By Horace S. Woodward

Attorney

Patented Dec. 2, 1941 2,264,483

UNITED STATES PATENT OFFICE

2,264,483

SASH ANCHORAGE FOR CHAINS

Samuel Rosenberg, deceased, late of New York, N. Y., by Gertrude Pousman, administratrix, New York, N. Y., and Thomas Rosenberg, New York, N. Y.

Original application August 27, 1938, Serial No. 227,215. Divided and this application April 15, 1940, Serial No. 329,606

1 Claim. (Cl. 16—204)

This application is a division of a copending application, Serial 227,215, filed August 27, 1938, by Samuel and Thomas Rosenberg, for Sliding sash suspension, which matured into Patent No. 2,216,213, October 1, 1940.

The invention has for an object to present a more secure attachment of the chain to the sash, using a helical spring in the usual anchor bore of the sash. Helical springs have been largely used heretofore, and numerous cases of dropping of weights or sash have been due to the spring rotating in the bore so as to release the chain from the spring and from the sash. Nevertheless this type of fastening has continued to be largely used, because of its cheapness, and the simplicity and ease with which it may be applied to the chain and to the sash.

It is therefore an important object of this invention to enable the production of a closely similar device, costing no more, using similar material in similar quantity, and involving no change in the well known practice of application to the chain and engagement in the sash, yet so constructed that rotation of the helical element in the chain is prevented, and also its rotation in the bore of the sash prevented independently.

Additional objects, advantages and features of invention may reside in the construction and arrangement of the parts involved in the embodiment of the invention, as will appear from the following description and accompanying drawing, wherein

Figure 1 is a fragmentary perspective view of an upper corner of a conventional sash to which my invention has been applied.

Figure 2 is a fragmentary edge view of a double bore sash.

Figure 3 is an end view of the helical spring anchor.

Figure 4 is a side elevation thereof.

There is illustrated in Figure 1 a portion of a conventional sash **16**, having the familiar single anchor bore **17** in the side of the stile and the usual cord or chain groove **18**, extending from the bore upward medially in the vertical edge face of the sash, to the top of the sash. This is a usual construction of anchorage used to attach woven fiber cords as well as chains to the sash, and with which this invention is highly efficient, but various other methods of boring or grooving the sash for attaching the suspension chain or cord may also be utilized with this invention, as will be clearly apparent.

A chain **21** is shown, such as illustrated in the said prior application, by which the sash is suspended in the present instance, but the anchorage invention is applicable to various other forms of chain used for such purpose, as will be readily understood from this disclosure.

The chain is anchored to the sash by being engaged with a helical spring **27** comprising the present invention, by having the end of the spring inserted in the end link of the chain and the spring rotated until the link is at a satisfactory intermediate position on the spring, the latter being inserted in the bore **17**, and the chain extended therefrom along the groove **18**, whence it may be carried over the usual sash pulley or other suspension device, not shown.

This spring is, as in the prior spring, ordinarily formed with three turns, coils or helices, or more, and with a diameter enabling it to be pushed manually into the bore **17**. It consists of a series of straight bar portions **28** formed in one continuous piece disposed at such mutual externally convex angles **29** between each two mutually adjacent and continuous portions **28**, as to conform generally to a circular helix. The mutually adjacent coils are preferably spaced slightly closer together than the diameter of the wire or bars of the chain shown, or the engaged ring or stirrup element of such other chain or suspension as may be used. This results in a frictional binding or the engaged chain link or other inserted part by contraction of the spring upon the inserted part between the coils due to the straining of the spring when the coils are spread further apart than their initial spacing by the wider stock of the link.

In the present instance, the coil as viewed from one end is substantially hexagonal, so that the straight elements **28** thereof subtend six short arcs of a geometrically constructed symmetrical helix or curve bounding the projections or angles **29**. In other words, the device corresponds to a helical coil which may be imagined as that which would be produced if portions of a circular cylindrical wire helix were displaced toward the axis, forming vertices equally spaced along the length of the wire and intervening sections subtending the original position of the displaced wire. The coils may be otherwise shaped to produce a plurality of external angular projections and concave angularities at the inner side, but the simple form shown has been found to operate to good advantage. It has been the practice that the external angularities in the coils are arranged in longitudinal alinement, but this is not arbitrary, and the angles of one helix

may be staggered or offset in relation to the angles of the next, or may be otherwise out of line, if for any reason found desirable.

The spring is customarily formed of very heavy wire, preferably spring steel, and for the standard bore 17 and common sash, has been formed of No. 12 guage wire, copper plated, and of sufficient diameter and length to bind against the lower side of the inner part of the bore 17 when inserted therein, if it tends to become inclined axially relatively to the bore. This makes certain that the spring can not turn on a transverse axis.

In use, one end link of the chain is pressed into the space between one end of the spring and the next turn or single coil convolution of the spring, where it becomes tightly bound between two convolutions or turns, and the link is pushed slidingly along between the end portion of the spring and the next coil until it becomes positioned in the interior angle within one of the projections 29, opposite the point of entrance of the link. That is to say, the engaged link portion is pressed along under the end of the first convolution of the spring for a distance of about one-half the circumference of the spring. The opposite end of the spring is then inserted in the bore 17 and pushed thereinto until the engaged link of the chain checks the inward movement of the spring into the bore by striking against the inner side, or bottom of the groove 18 when the chain is extended vertically from the spring, the chain then being in longitudinal alinement with the groove. The outermost convolution of the spring so engaged through the link then extends across the groove 18 seated against upper surfaces of the bore at each side of the groove. This outer convolution is at the same time spaced from the side face of the sash, so that the spring will not rub against the window frame, at the bottom of the sash channel in the frame, when the sash is in place in the frame. The sash is then hung as usual, by passing the chain over the sash pulley and attaching a weight or other counter balance thereto.

When the sash is hung by the chain so engaged, the angles 29 become pressed into the wood of the sash at the upper side of the bore, and thereby serve to prevent the spring from rotating on the longitudinal axis, which would enable it to become disengaged from the chain. The engagement of the chain in the inner angle of the spring at the upper side serves additionally to prevent rotation of the spring on its longitudinal axis. The embedding of these angles also serves to prevent longitudinal slipping of the spring outward in the bore 17. Due to these functions of the device it is not necessary for the spring to be made of such size as to require a driving fit in the bore 17, and its emplacement is thereby greatly facilitated.

In the case of a double bore sash, as shown in Figure 2, the chain is dropped through the communicating small opening 45 connecting the upper and lower bores 17' and 46, drawn outward through the lower one, and engaged with the spring 27 as before described. The spring being inserted in the lower bore in the same relation to the chain and edge of the sash as before mentioned, the chain is drawn taut and extended in the groove 18'.

It will be appreciated that in order for the device to engage properly against being pulled into a diagonal position in the bore 17 and thus tending to slip out of the bore of Figure 1 and gouging the window frame, it is desirable that there be sufficient coils on the device, and that these be spaced so that they may extend into the bore a substantial distance. For this reason, not less than three complete coils should be included in each device, as shown, with a spacing between the coils nearly equal to the diameter of the bars of the chain to be anchored. In this way, also, not only do the angles at the upper side of the anchor spring tend to become embedded in the wood of the sash, but also one or more of those at the lower side, at the extreme inner end of the device in the bore 17. By having a sufficient number of the angles 29 on the device it is held better centered in the bore 17, and may fit better thereto, and preferably there should be not less than five angles on each coil of 360 degrees around the longitudinal axis of the spring.

We claim:

A sash anchorage for chain sash suspensions consisting of a wire spring substantially in the form of a polygonal helix with not less than three spaced convolutions, each convolution extending over 360 degrees around the axis of the helix, and each convolution consisting of a continuously connected series of more than four sections shaped to produce at their junctions salient vertices of uniform radius, the body portion of each section subtending a respective geometrically constructed arc of a symmetrical circular helix bounding said vertices, said spring being of a diameter to fit the surfaces of the anchor bore of a sash as described.

THOMAS ROSENBERG.
GERTRUDE POUSMAN,
Administratrix of the Estate of Samuel Rosenberg, Deceased.