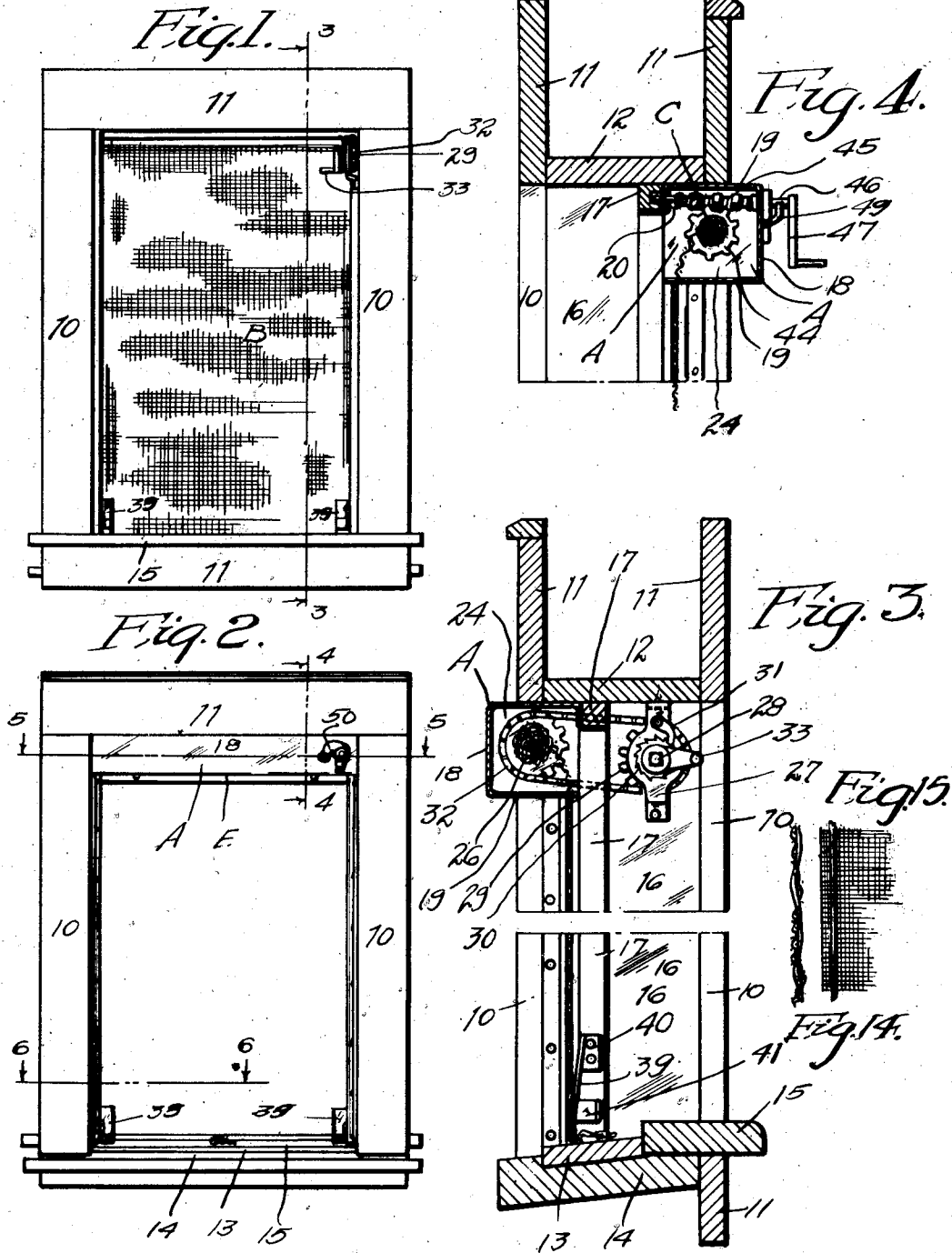


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ROLLING WINDOW SCREEN.
APPLICATION FILED JAN. 2, 1920.

1,405,618.

Patented Feb. 7, 1922.
2 SHEETS—SHEET 1.



Witness
A. E. Davis

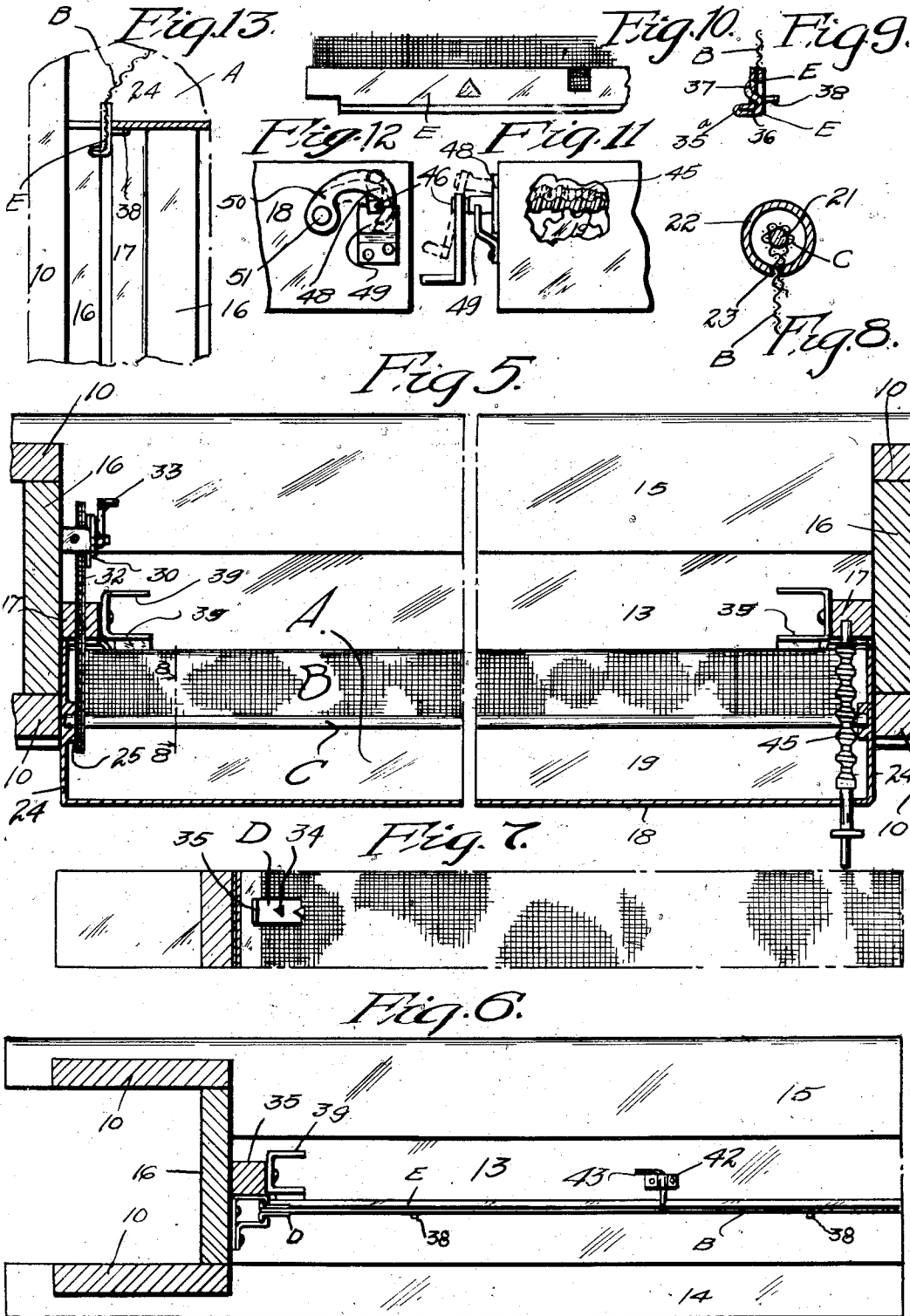
Inventor
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BY Orwig & Bair Attys

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UNITED STATES PATENT OFFICE.

NELS H. NELSON, OF SPENCER, IOWA.

ROLLING WINDOW SCREEN.

1,405,618.

Specification of Letters Patent.

Patented Feb. 7, 1922.

Application filed January 2, 1920. Serial No. 349,041.

To all whom it may concern:

Be it known that I, NELS H. NELSON, a citizen of the United States, and a resident of Spencer, in the county of Clay and State of Iowa, have invented a certain new and useful Rolling Window Screen, of which the following is a specification.

The object of my invention is to provide a rolling window screen of simple, durable and inexpensive construction.

A further object of my invention is to provide a rolling window screen comprising a pliable screen member mounted on a roller, whereby the screen may be unrolled to cover the window opening or rolled up to position, where it will not be in the way and will not be affected by the weather.

A further object of my invention is to provide novel means for supporting and operating the roller, whereby the latter may occupy a minimum amount of space, and its operation be rendered easy.

A further object of my invention is to provide operating means, which may be extended through the divider strip on the window frame, so that the slot, which must be cut in the sash will not appear and will admit a minimum amount of air to pass there-through.

A further object of my invention is to so mount the roller that the supporting means therefor will not interfere with the use of a storm sash in the window frame, and the use of the storm sash will not interfere with the operation of the screen should its use be necessary.

A further object of my invention is to so arrange the operating device for my roller, that it may be operated from either the inside or the outside of the window frame, and to provide novel means for rendering either operative device inoperative when desired.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which:

Figure 1 shows an elevation of a window

frame from the inside of the window, showing my screen placed thereon.

Figure 2 shows a similar view from the outside of the frame, the screen being rolled up to inoperative position.

Figure 3 shows a vertical, enlarged, sectional view taken on the line 3—3 of Figure 1.

Figure 4 shows a similar view taken on the line 4—4 of Figure 2.

Figure 5 shows a horizontal, enlarged, sectional view taken on the line 5—5 of Figure 2.

Figure 6 shows a similar view taken on the line 6—6 of Figure 2.

Figure 7 shows an enlarged, vertical, sectional view taken substantially through the center of the guide for the side edges of my screen.

Figure 8 shows a vertical, enlarged, sectional view through the roller, which carries the screen.

Figure 9 shows a transverse, sectional view through the stiffening bar at the bottom of my screen.

Figure 10 is an enlarged, detail view illustrating the construction of the bottom bar.

Figures 11 and 12 are enlarged, detail view illustrating the mechanism for throwing one of the operative devices out of operative position, parts being broken away in the former figure to better illustrate the construction.

Figure 13 is a vertical, enlarged, detail view illustrating the contact of the stiffening bar with the roller casing, when the screen is rolled up into the casing; and

Figures 14 and 15 illustrate another form of stiffening and guide members for my screen.

Referring to the accompanying drawings, I have used the reference numeral 10 to indicate generally the side frame members of a window casing, which lay flush with the wall, and the reference numeral 11 to indicate the bottom and top corresponding members. Extending between the frame members 11 at the top is the top frame member 12 of the casing, and at the bottom are frame members 13 and 14 and a sill 15. Between the top and bottom frame members are the side frame members 16, which carry

a divider strip 17. The member 12 also has a divider strip 17 extended thereacross.

These parts are of usual construction and form no part of my invention, except in so far as they furnish the support for the parts thereof and illustrate its position and construction.

It will be understood that there are a certain number of definite disadvantages accompanying the use of the ordinary window screen with its frame, among which may be mentioned the fact that the screen is exposed to damage from the weather and other sources, whether it is in position in the window frame or stored away during the time that the screen is not needed.

It is also somewhat difficult to remove the screen and frame and to replace it, and it is to obviate these and other disadvantages that I have devised my improved rolling screen.

The roller device is mounted within a substantially rectangular casing, which I have designated generally by the letter "A," and which is designed to be secured in any suitable manner to the frame members 12 and 16 or the members 10 and 11, in position to fill the top of the casing outside of the divider strip 17. This casing comprises an outside wall 18, top and bottom walls 19 and an inner shoulder 20 formed integral with the top 19 and designed to rest against the outer and lower surfaces of the divider strip 17 at the top of the window.

Journaled longitudinally within this casing is the roller device, which comprises a central bar 21 around which is disposed a substantially tubular casing 22, having an elongated slot 23 therein.

The upper edge of my screen is designed to be secured within this roller by folding over the upper edge of the screen "B," then sliding the folded portion onto the rod 21, so that the end of the screen will project outside of the slot 23.

Referring to Figure 8, it will be seen that this construction will permit ready detaching of the screen to replace or repair the latter, and at the same time will permit the roller to be rolled in either direction to roll up the screen.

The ends of the roller, which I have designated generally by the letter "C," are journaled in the ends 24 of the casing "A" at 25, and fixed to one end of the roller "C" is a sprocket wheel 26. Fixed to the inner surface of the side frame member 16 adjacent to the sprocket 26 is a bracket member 27, having a substantial opening therein designed to form a bearing for a pintle 28, upon which is mounted a sprocket wheel 29.

Outside of the bracket 27, a ratchet wheel 30 is secured to the pintle 28, and a dog 31 is pivotally connected to the bracket to co-

act with the ratchet 30. The dog 31 is riveted tightly enough to the bracket 27, so that when it is raised out of engagement with the ratchet, it will remain in that position.

This result may also be accomplished by slightly bending either the dog 31 or the bracket 27, so that when the dog is moved to inoperative position, it will be held there by the frictional engagement of the two members.

The sprockets 29 and 26 are connected by a chain 32 and a detachable crank 33 is arranged to coact with the squared end of the pintle 28 to permit the crank to rotate the latter.

From the construction of the parts just described, it will be seen that rotation of the crank 33 will impart rotation through the chain 32 and the sprockets 26 and 29 to the roller "C," so that the roller may be operated to roll the screen "B" thereon.

Suitable means, which will hereinafter be described, are arranged at the bottom of the screen to hold it from upward movement, and it will be seen that when these means are engaged with the bottom of the screen, then the dog 31 may be operated to tighten the screen, by rotating the roller, and hold it with tension thereon to give the screen a neat appearance and to prevent it from undue wear.

In this connection, it will be noted that the chain 32 passes through the divider strip 17 in the side of the casing for a purpose, which will hereinafter be made clear.

For guiding the sides of the screen when it is being rolled up or unrolled, I have provided the following described means: At intervals on the side of the screen are clips designated generally by the letter "D," which comprise two pieces of sheet metal held from movement relative to each other by tongues 34 punched out of one piece and extended through a slot in the other piece and then bent over.

The ends of these clip members are turned outwardly away from each other somewhat at 35. A guide member is formed by bending a strip of sheet metal upon itself to position illustrated in Figure 6. The slot in the guide is then made by sawing through the end of the loop, thereby insuring a close fit for the screen guides, and making a convenient construction.

The bottom of the screen is provided with a stiffening rod "E," which is clearly shown in Figures 9 and 10. This comprises a single strip of sheet metal bent upon itself at 35^a. The portions adjacent to the bend 35^a are then again bent at right angles at 36.

The screen "B" may then be inserted between the edges of the strip and the bend 35^a together with the bend 36 will provide

a laterally extending edge at the bottom of the stiffening rod for a purpose, which will hereinafter be made clear.

The screen "B" is fastened between the edges of the stiffening bar, by means of tongues 37, which are punched out of one of the sides of the bar and extended through a slot in the other side of the bar, and through the screen and then bent over against the second side of the bar to form a tight grip to hold the screen from sliding out of the stiffening bar. This construction is illustrated in Figure-9.

Tongues 38 are also punched out of the stiffening bar to extend laterally therefrom on the side opposite the flange, and adapted to coact with the bottom wall 19 of the casing "A" to prevent the end of the screen from being rolled up into the casing, where it would be inaccessible, when it was again desired to unroll the screen.

From the construction of the parts just described, it will be seen that when the screen is to be unrolled, the stiffening bar "B" may be grasped by the operator, and the screen simply pulled down between the side guides, until the stiffening bar comes in contact with the bottom frame member 13.

For holding the stiffening bar in this position, I have provided the following devices. These devices comprise a spring device 39, which is secured to the divider strip 17 by an angular extension 40, and which normally extends into the path of movement of the stiffening bar. When the stiffening bar reaches the frame member 13, then the flange thereon will clear the lower end of the spring 39, and the end will spring back into the path of movement of the flange, thereby preventing the stiffening bar from moving upwardly away from the frame member 13. This construction is illustrated in Figure 3.

A handle member 41 is preferably formed integral with the spring 39 and extended inwardly therefrom, whereby the end of the spring may be pulled out of contact with the flange on the stiffening bar to permit the latter to be raised when the screen is to be rolled up.

For holding the center of the stiffening bar in position, I provide a device comprising a strip 42, which is secured to the frame member 13, at the center thereof and forms a bearing for a wire 43, the ends of which are bent at right angles to each other. The wire 43 may be slid in its bearing for forming a means to engage the flange on the "stiffening bar or for moving to inoperative position."

When the screen is rolled down to the position shown in Figure 3, and the stiffening bar engaged by the clips described, then the crank 33 may be rotated to wind up the screen and place the screen under tension, as has hereinbefore been described, and the

dog 31 will then engage the ratchet 29 to hold the screen under this tension.

For operating my improved roller screen device from the outside of the window frame, I have provided the following mechanism:

Fixed to the end of the roller "C" opposite the sprocket 26 is a worm wheel 44 designed to coact with a worm 45, which is preferably formed integral with the shaft 46. The inner end of the shaft 46 is journaled in the shoulder 20 of the top frame member 19 of the casing "A," and the outer end of the shaft 46 is provided with a crank 47.

The wall 18 of the casing "A" adjacent to the crank 47 is slotted to receive the shaft 46, as is illustrated by the dotted lines 48 in Figure 12.

An auxiliary bearing bracket 49 may also be secured to the wall 18, if desired. A locking lever 50 is pivoted at 51 to the wall 18 in such position that it may either hold the shaft 46 in position, where the worm 45 will contact with the worm wheel 44 or may be swung to position to hold the shaft in position, where the worm will be out of engagement with the worm wheel, as is illustrated by the dotted lines in Figure 11.

From the construction of the parts just described, it will be seen that the shaft 46 extends outwardly from the casing of the window and may be rotated by the crank 47, when desired to rotate the roller "C," and consequently to roll up the screen member "B."

In connection with the chain operation of the roller, it will be noted that the positioning of the sprockets 26 and 29 is such that the chain connecting them may be extended through the divider strip 17, so that the top side edge of the upper sash may be slotted to allow the chains to pass therethrough without interfering with the operation of the chains or free sliding movement of the sash.

This is an important feature of my improved construction, as it does not make it necessary to make holes through the sash, which would possibly permit cold air to enter through the sash, and as it does not disfigure the sash in a place where it shows.

Attention is also directed to the construction of the screen reinforcing device and guide member illustrated in Figures 14 and 15, wherein a wire of somewhat resilient material, but more especially of pliable material is threaded through the screen adjacent to the edges thereof, whereby said wire may form a reinforcing for the screen, and may also coact with the guide members to prevent the screen from sliding out from between said guide members.

Some changes may be made in the construction and arrangement of the parts of my improved device, without departing from the essential features and purpose of

my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents, which may be reasonably included within
5 their scope.

I claim as my invention:

1. In a device of the class described a roller, a flexible screen secured thereto and adapted to be rolled thereon, a frame on
10 which said roller is supported, means on said frame for engaging one edge of said screen when unrolled and means adapted to draw said screen to various degrees of tensions
15 and for locking said screen under such various degrees of tension, said means comprising a sprocket operatively connected to said first sprocket, a pawl device for holding said second sprocket against movement in one
20 direction and a crank whereby rotation may be imparted to said second sprocket.

2. In a device of the class described, a

roller, a flexible screen secured thereto and adapted to be rolled thereon, a frame on which said roller is supported, means on
said frame spaced from said roller for en- 25 gaging one edge of said screen and holding it when the screen is unrolled, and means adapted to draw said screen to various degrees of tensions, as may be desired, and for
locking said screen under such various de- 30 grees of tension, said means comprising a sprocket on the end of said roller, a second sprocket laterally spaced from said first sprocket, a chain connecting said sprockets,
35 a ratchet wheel on said second sprocket, a pawl coacting with said ratchet, whereby said sprockets may be turned in only one direction, and a removable crank for imparting rotation to said second sprocket.

Des Moines, Iowa, December 13, 1919.

NELS H. NELSON.