

Nov. 10, 1953

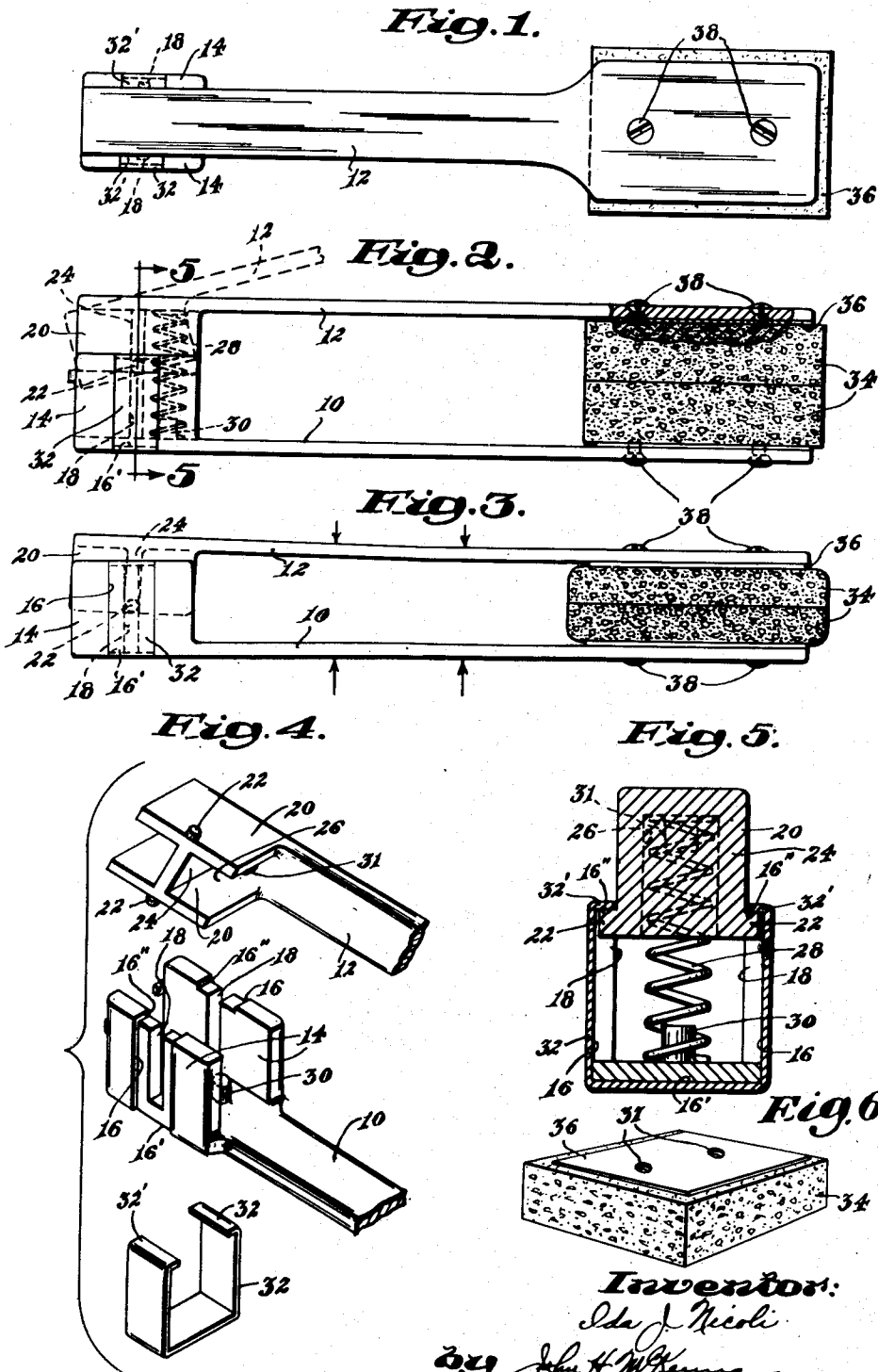
I. J. NICOLI

2,658,221

DEVICE FOR MANUAL CLEANING OF VENETIAN BLIND SLATS

Filed Oct. 28, 1950

2 Sheets-Sheet 1



Inventor:

I. J. Nicoli

by John H. McKenna
Attorney

Nov. 10, 1953

I. J. NICOLI

2,658,221

DEVICE FOR MANUAL CLEANING OF VENETIAN BLIND SLATS

Filed Oct. 28, 1950

2 Sheets-Sheet 2

Fig. 7.

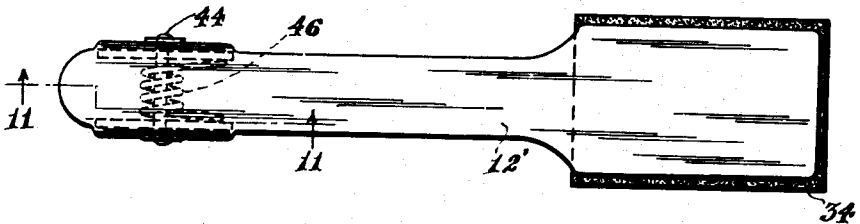


Fig. 8.

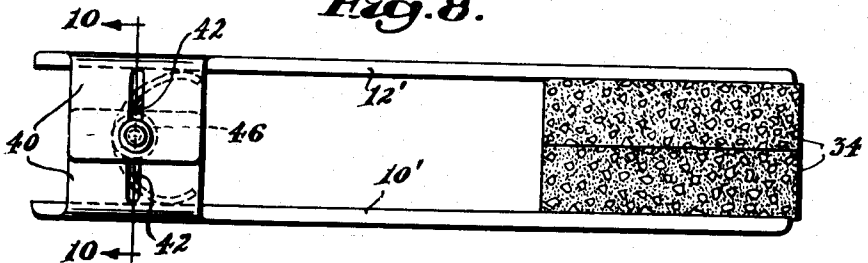


Fig. 9.

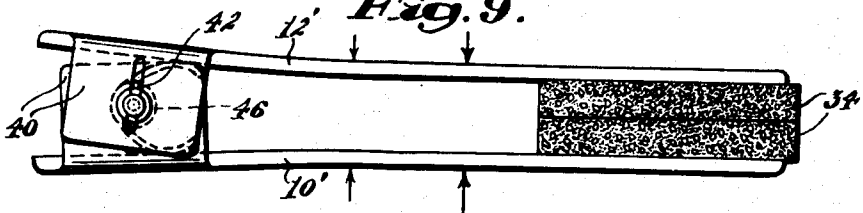


Fig. 10.

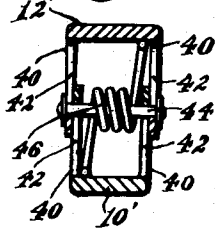
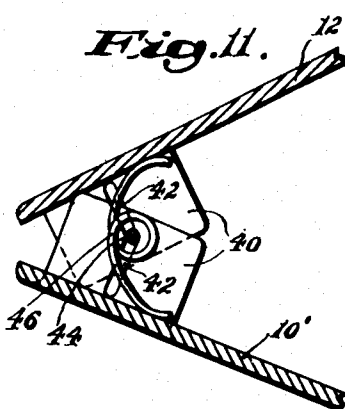


Fig. 11.



Inventor:

Ida J. Nicoli

by

John H. McKenna

Attorney

UNITED STATES PATENT OFFICE

2,658,221

DEVICE FOR MANUAL CLEANING OF
VENETIAN BLIND SLATS

Ida J. Nicoli, Framingham, Mass.

Application October 28, 1950, Serial No. 192,650

4 Claims. (Cl. 15-244)

1

This invention relates to improvements in apparatus for cleaning Venetian blinds, and the like. More particularly it provides a manually operable cleaning apparatus whereby the individual slats of Venetian blinds may be effectively cleaned by a wiping action of a pair of sponge elements, or the like, which conveniently and easily may be manually manipulated along a slat in simultaneous wiping engagement with its opposite sides.

It is among the objects of the invention to provide a cleaning apparatus having a pair of opposed cleaning elements on hinged supporting members which automatically adjust themselves in the hand of a user when the cleaning elements are brought into engagement with opposite sides of a strip which is to be cleaned, thereby to facilitate flatwise engagement of the cleaning elements against the strip surfaces with a minimum of applied pressure which avoids clamping of the strip between the cleaning elements in a manner which would prevent or make difficult a cleaning movement of the cleaning elements along the strip. According to the invention relatively flat cleaning sponges or pads are mounted in opposed relation on the corresponding ends of levers whose other ends are hinged together with provision for resilient relative yielding of the hinged ends toward each other when the pads at the other ends of the levers are pressed into engagement with a strip which is to be cleaned.

Another object of the invention is to provide a cleaning apparatus comprising a pair of levers each having a cleaning pad removably mounted at one end, and the other ends of the levers having pin-in-slot means loosely hinging the levers together, with resilient means yieldingly permitting movement of the hinged ends of the levers toward each other when the pads are pressed toward each other by the hand of a user gripping the levers.

Yet another object of the invention is to provide a cleaning apparatus comprising a pair of levers loosely hinged together at one end and having a cleaning pad removably mounted at the other end of each lever, each pad being adhered to a thin backing plate and the backing plate being removably mounted on a said lever.

It is, moreover, my purpose and object generally to improve the structure and effectiveness of apparatus for simultaneously cleaning opposite sides of a strip element and more especially the slat elements of Venetian blinds, and the like.

In the accompanying drawings:

Fig. 1 is a top plan view of a Venetian blind cleaner embodying features of my invention;

2

Fig. 2 is a side elevation thereof with portions broken away and in section, the normally open position of one of the levers being indicated by dotted lines;

Fig. 3 is a view similar to Fig. 2 but showing the parts in their relative positions when a predetermined manual pressure is applied at and in the directions of the arrows;

Fig. 4 is an isometric showing of the hinged end portions of the two levers and of the retaining clamp, in separated relationships;

Fig. 5 is a cross-sectional view on line 5-5 of Fig. 2, on a larger scale;

Fig. 6 is a perspective view of one of the cleaning sponges adhered to its backing plate by which it becomes removably secured to one of the levers;

Fig. 7 is a top plan view of a modified form of blind cleaning apparatus, embodying features of the invention;

Fig. 8 is a side elevation of the apparatus of Fig. 7;

Fig. 9 is a view similar to Fig. 8 but showing the parts in their relative positions when a predetermined manual pressure is applied at and in the directions of the arrows;

Fig. 10 is a cross-sectional view on line 10-10 of Fig. 8; and

Fig. 11 is a cross-sectional view on line 11-11 of Fig. 7, but with the levers at the limit of their opening travel.

Referring to Figs. 1-6 of the drawings, the embodiment of the invention, as therein illustrated, has the two arms or levers 10, 12 which, preferably, will be formed of a suitable plastic or composition material. One end portion of lever 10 has the spaced ears 14 projecting in parallelism at one face of the lever, and the exterior side of each ear 14 has a shallow groove 16 therein as best seen in Fig. 4. A continuation 16' of groove 16 extends across the lever at the side thereof opposite the side from which ears 14 project, and other short continuations 16'' of groove 16 extend across the outer edges of the ears 14. Each ear 14 is slotted at 18, within the groove 16 to provide an elongated guide for a purpose which later will appear.

One end portion of lever 12 has projecting from a face thereof the pair of ears 20, in spaced parallelism, the spacing of ears 20 being such that they fit nicely between the ears 14 of lever 10, and the outer edges of ears 20 have the two short lugs or trunnions 22 projecting laterally at opposite sides thereof. When ears 20 are inserted between ears 14 of lever 10, the lugs 22 are adapted to engage in the slots 18 of ears 14 and

constitute pivot means about which the arms may have relative rotation.

The space between ears 20 may have a dividing wall 24 extending between the ears 20 but this ordinarily is not necessary. When ears 20 are inserted between ears 14 during assembly of the levers, a coil spring 28 is inserted between the levers in the space between the ears, the spring being slightly compressed and having its opposite ends engaging around the positioning lugs 30, 31 which are located on levers 10 and 12, respectively. While the ears 20 are held pressed inward between ears 14, the resiliently generally U-shaped clip 32 is snapped into place in the grooves 16, 16', and the clip has the in-turned end portions 32' for engaging in the edge grooves 16'' of ears 14 thereby covering the outer ends of slots 18 and constituting stops for maintaining the lugs or trunnions 22 against escaping through the ends of slots 18. The clip 32 preferably will seat in grooves 16, 16', 16'' so that its exterior surfaces will be flush with the adjacent surfaces of lever 10 and ears 14.

Spring 28 has stiffness capable of spreading the levers 10, 12 so that lever 12 will assume its dotted position of Fig. 2 when the levers are free of manual pressure urging them toward each other, but the spring yields under relatively small manual pressure applied to the levers, thereby permitting the ears 20 of lever 12 to move inward between the ears 14 of lever 10, with the trunnions 22 moving along the guide slots 18, and with the trunnions 22 serving as pivot means for permissible relative tilting of the ears, as may be required.

The opposite end of each of the levers 10, 12 has mounted thereon a cleaning element 34 which, preferably, will be a rectangular sponge element of any suitable thickness. Conveniently, each of the sponge elements may be adhered to a thin but rigid backing plate 36, and these backing plates are removably mounted on the levers 10, 12 with the sponge elements in opposed relation. The backing plates may be secured to the levers by the screws 38, or by any other suitable means. Fig. 6 shows one of the sponge elements 34, with its backing plate 36 which has the threaded holes 37 therein for reception of the screws 38.

In use, the apparatus of Figs. 1-6 will be lightly held in the hand with the fingers engaging around both levers in the approximate vicinity of the arrows in Fig. 3. The levers, when relieved of manual pressure, spread apart under the urge of spring 28 to permit placing of the sponge elements 34 on opposite sides of the strip element which is to be cleaned. Then, with relatively slight hand pressure on the levers, the sponge elements yieldingly engage the strip element between them, and the ears 20 on lever 12 simultaneously move inward between the ears 14 of lever 10 at the opposite ends of the levers, with slight relative tilting of the ears about the pivot trunnions 22 as suggested in Fig. 3. The yielding pin-in-slot hinge connection and the relatively light spring 28 combine to produce a floating action at this end of the levers as the hand maintains the sponge elements in effective cleaning engagement with the strip element which is being cleaned, with an easy and natural maintenance of adequate pressure on the strip without introducing a tiring amount of frictional resistance to wiping movements of the sponge elements along the strip. Also, the yielding at the hinge connection facilitates the attainment of a proper en-

gagement of the strip surfaces by the sponge elements.

It is a further important feature that the sponge elements quickly and efficiently may be squeezed to a comparatively dry condition following a cleaning operation with the sponge elements relatively wet, such as for wiping moisture or other cleaning fluid from the surfaces of a strip element. Here again, the levers yield at their hinge connection under the squeezing pressure applied by the hand thereby permitting the sponge elements to be uniformly squeezed as compared with a comparable application of pressure to sponge elements at the ends of levers having a conventional hinge.

My improved yielding hinge connection has the additional advantage that it facilitates efficient utilization of the available characteristics of sponge elements of varying thicknesses. Such sponges wear away rather quickly in use, gradually diminishing in thickness. The yieldable hinge connection as herein disclosed automatically accommodates itself to whatever thickness of sponge elements is being used, under the manual pressure naturally applied by the user in any particular strip-cleaning process.

Figs. 7-11 illustrate an embodiment of the invention wherein the action is generally the same as described in connection with the Figs. 1-6 embodiment. The sponge elements 34' have no backing plate in the Figs. 7-11 embodiment and are permanently adhered directly to the levers 10', 12'. Also, at the hinged ends of levers 10', 12', each lever has similar parallel ears 40 thereon, with the ears of lever 10' fitting between the ears of lever 12'. Each of the ears has a guide slot 42 therein and a pivot pin 44 extends through all of the slots and is headed at its opposite ends. A spring 46 is coiled about pin 44 with one end engaging lever 10' between its ears 40 and with its other end engaging lever 12' between its ears 40. The spring preferably is a relatively light spring capable of spreading the levers to their wide open inclined relation of Fig. 11 when the levers are free of manual pressure. The hinge connection yields, as in Fig. 9, when the device is in use for cleaning a strip element and also when the sponge elements are being squeezed preparatory to a wiping operation, as described in connection with the Figs. 1-6 embodiment.

It is intended that the patent shall cover, by suitable expression in the appended claims, whatever features of patentable novelty exist in the invention disclosed.

I claim as my invention:

1. Apparatus for cleaning strip elements, comprising two relatively rigid arms, a cleaning pad element mounted on one end portion of each arm, means hingedly connecting the arms together at their other ends whereby the arms are movable about the said hinge connection to move said pads toward each other, said hinge connection comprising an elongated guide on at least one of said arms and a pivot means engaging in said guide and relatively movable there along in response to forces applied in directions urging the hingedly connected ends of the arms toward each other, and a spring at said hinge connection biasing the hingedly connected ends of the arms apart and biasing said pivot element in one direction along said guide, whereby manual pressure applied to said arms in directions to move the arms toward each other effects movement of the hingedly connected ends of said arms to-

5

wards each other simultaneously with movement of said cleaning pad elements toward each other into engagement with a strip element which is to be cleaned, said arms being relatively movable about said pivot means when the arms are relieved of manual pressure so that the arms can respond to the biasing effect of said spring.

2. Apparatus for cleaning slat elements of Venetian blinds and the like, comprising a pair of relatively rigid arms, a cleaning pad element on one end of each arm, means pivotally connecting the arms together at their other ends, said means comprising an elongated guide on one arm and pivot means engaging in the guide and relatively movable therealong, a spring biasing the pivot element toward one limit of its permissible travel along the guide, said pivot element moving in the opposite direction along the guide in response to manual pressing of said arms toward each other, whereby manual actuation of said arms to move the said pads into engagement with opposite sides of a blind slat is accompanied by a shifting movement of the pivot element along the said guide as well as by needed rotational movement of said arms about the axis of said pivot element, said arms being relatively movable about said pivot means when the arms are relieved of manual pressure so that the arms can respond to the biasing effect of said spring.

3. Apparatus for cleaning slat elements of Venetian blinds and the like, comprising a pair of relatively rigid arms, a cleaning pad element on one end of each arm, means pivotally connecting the arms together at their other ends, said means comprising a pair of spaced parallel ears on one arm, and projecting means on the other arm engaged between said ears, means providing oppositely disposed elongated guides in said ears, and pivot elements on said projecting means of the other arm slidably engaging in said guides, a spring biasing the hingedly connected ends of

6

the arms in directions away from each other, and stop means limiting the travel of said pivot elements along the guide and thereby limiting the relative travel of the hingedly connected ends of said arms in directions away from each other.

4. Apparatus for cleaning slat elements of Venetian blinds and the like, comprising a pair of relatively rigid arms, a cleaning pad element on one end of each arm, means pivotally connecting the arms together at their other ends, said means comprising a pair of spaced parallel ears on one arm, a pair of spaced parallel ears on the other arm inserted between the first mentioned ears, a coil spring engaging at its opposite ends on said arms between said ears whereby the spring biases the two said arms apart, means providing oppositely disposed guide slots in said first mentioned ears, pivot elements on opposite sides of said inserted ears slidably engaging in said slots and biased by said spring in one direction along the slots, and a spring clip engaging exteriorly along said first mentioned ears and having projections for closing the outer ends of said slots thereby to limit the biased travel of said pivot elements along the slots.

IDA J. NICOLI.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
467,500	Fenwick	Jan. 26, 1892
797,489	Bellman	Aug. 15, 1905
1,162,784	Kajerdt	Dec. 7, 1915
2,134,806	Shough	Nov. 1, 1938
2,159,918	Warnock	May 23, 1939

FOREIGN PATENTS

Number	Country	Date
272,651	Great Britain	June 23, 1927