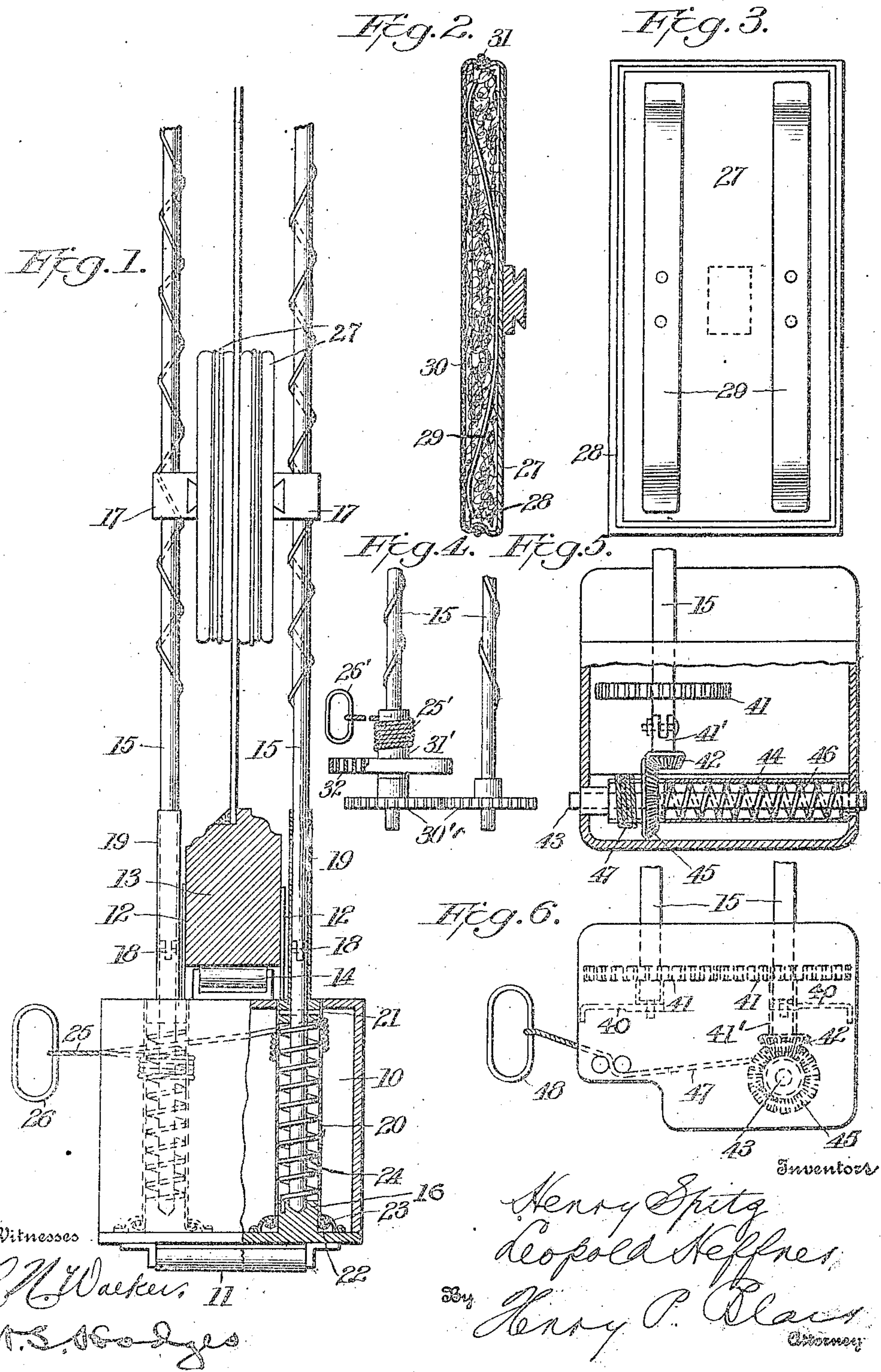


H. SPITZ & L. HEFFNER.  
WINDOW CLEANER.  
APPLICATION FILED JUNE 27, 1908.

917,178.

Patented Apr. 6, 1909.





# UNITED STATES PATENT OFFICE.

HENRY SPITZ AND LEOPOLD HEFFNER, OF NEW YORK, N. Y.

## WINDOW-CLEANER.

No. 917,178.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed June 27, 1908. Serial No. 440,615.

*To all whom it may concern:*

Be it known that we, HENRY SPITZ and LEOPOLD HEFFNER, subjects of the Emperor of Austria-Hungary, residing at New York, in the county of New York and State of New York, United States of America, have invented certain new and useful Improvements in Window-Cleaners, of which the following is a specification.

10 This invention relates to certain new and useful improvements in window cleaners.

The invention has for its object the production of a simple and inexpensive apparatus particularly adapted for cleaning of windows of high buildings, such as apartment houses, hotels, and office buildings, whereby the necessity of climbing out on to the outer window sill is avoided.

15 A further object is to provide means whereby both sides of a window pane may be simultaneously cleaned, if desired.

A further object is to provide improved means for operating the window cleaning elements.

25 A further object is to so support the cleaning apparatus that it can be moved to and fro during the cleaning operation, and thereby insure the cleaning of the entire window with minimum labor.

30 The invention will be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawing:—Figure 1 is a side elevation of our improved window cleaner in operative position, parts being shown in section. Fig. 2 is a longitudinal sectional view of one of the rubbers. Fig. 3 is a front view thereof with the cover removed. Fig. 4 is a detail view illustrating a slight modification of the wiper actuating mechanism. Fig. 5 is a detail view illustrating a second modification of the wiper actuating mechanism, parts being shown in section. Fig. 6 is a similar view of the same modification at right angles to Fig. 5.

45 Referring to the drawing, 10 designates a base constructed to be placed upon a window sill, and may, if desired, be provided with rollers 11, whereby it may be easily moved back and forth beneath the window sash. The upper face of said base is provided with wings 12 arranged to embrace both sides of

the sash 13, whereby the apparatus is guided in its movement, and if desired rollers 14 may be provided to bear against the underside of said sash for the purpose of reducing friction. Arranged adjacent each wing 12 is an upright worm shaft 15 the lower end of which is mounted in a bearing block 16 secured to the base 10. The worms on said shafts are of opposite pitch, and engage corresponding threads in nuts 17, whereby said nuts will be reciprocated upon the rotation of said shafts. Each shaft is pivoted or jointed at 18 for convenience in placing the apparatus in position on a window sill with one of the shafts on the outside of the latter, said shafts being held rigid while in operation, by means of sliding sleeves 19. The lower end of each shaft 15 is inclosed within a sleeve 20 secured to the shaft by a pin 21, the lower end of said sleeve surrounding the block 16. Said lower end of each sleeve is also provided with an exterior flange 22 fitting beneath a keeper plate 23, ball bearings being preferably provided to reduce friction during the rotation of said sleeve. Each shaft 15 within sleeve 20 is surrounded by a coiled spring 24, one end of which is secured to the block 16 and the other end to the sleeve, whereby rotation of said sleeve in one direction will tend to tighten the spring, and the reaction of the spring tends to rotate the sleeve in the opposite direction. To the upper end of each sleeve is connected a string or wire 25, one end of each string or wire being partially wrapped around the sleeve, the other end being secured to a suitable handle or grip device indicated at 26.

85 The rubbers may be of any suitable or preferred structure, but we have provided for this purpose a frame 27 of sheet metal provided with a flange 28 and springs 29. A suitable filling is placed within the frame 27 and covered with a cloth 30, which is tied over the flange 28 in any suitable manner, as by a string 31, whereby the cloth may be renewed at will. Each frame 27 is provided with a dovetailed lug which fits into a corresponding groove in the nuts 17.

100 In practice, to place the device in position, one of the shafts 15 is broken at the joint 18, by raising sleeve 19, said shaft being passed beneath the window sash and the base 10 placed on the sill. The broken



shaft is then brought to a vertical position with its rubber against the window pane, and the sleeve 19 brought back to its normal position, after which the sash is lowered to the position shown in the drawings. The operator then pulls on the cords 25 rotating the sleeves 20 and shafts 15 in a direction to tighten the springs 24, whereupon the worm will cause the nuts 17 to move upward carrying with them the rubbers. As soon as the tension on the cords 25 is released, the springs 24 will cause said shafts 15 to rotate in the opposite direction, bringing the nuts and rubbers downward, this operation being continued as long as desirable. When it is found necessary to shift the device the same may be moved on the rollers 11 by a slight touch. Thus it will be seen that the rubbers are reciprocated vertically and the carriage moved horizontally, thereby insuring the cleansing of the entire window without necessitating the operator going on the outside of the window sill.

In Fig. 4 we have shown a modified construction for effecting the simultaneous rotation of the worm shafts 15. In this form each shaft is provided with a pinion 30, in mesh, whereby they will rotate in unison. One of said shafts is surrounded by a casing 31 secured to base 10 in any suitable manner and provided with a coiled spring 32, one end of which is secured to the worm shaft and the other end to said casing. The cord 25' surrounds the spring pressed worm shaft and is provided with a suitable handle 26'. From this it will be seen that a pull on said cord will rotate the shafts in unison in one direction, and the spring 32 will rotate them in the opposite direction.

A second modification is shown in Figs. 5 and 6. In this form the shafts 15 are supported at their lower ends in brackets 40 and provided with intermeshing pinions 41, said brackets being provided with ball bearings if desired. To the lower end of one of the shafts 15 is connected a short sleeve 41' provided with a beveled pinion 42. A horizontal shaft 43 is mounted in suitable bearings in the base 10, the same being surrounded by a sleeve 44, connected to the shaft in any suitable manner and provided with a beveled pinion 45 in mesh with the pinion 42. A coil spring 46 encircles the shaft 43 within sleeve 44, one end of said spring being connected to the shaft and the other end to the base 10. An operating cord 47 encircles sleeve 44 and is provided with a handle 48. From the foregoing it is obvious that a pull on the cord 47 will rotate shaft 43 in one direction, and through the intermediate gearing will simultaneously rotate the worm shafts, a reverse rotation

being effected by the spring 46 when said cord is released.

We claim as our invention:—

1. A window cleaner comprising a base or support, a plurality of worm shafts carried by said base, a wiper mounted on each shaft and constructed to be reciprocated thereby, means for rotating said shafts in unison, and means for simultaneously reversing the rotation of said shafts.

2. A window cleaner comprising a base or support, wipers arranged to engage opposite sides of a window pane, worm shafts for reciprocating said wipers, and means for operating said shafts.

3. A window cleaner comprising a base or support, a plurality of worm shafts carried by said base and each provided with a break joint, a wiper on each shaft constructed to be reciprocated by the latter, means for rotating said shafts in unison, means for simultaneously reversing the rotation of said shafts, and sleeves for supporting said shafts at the break joints.

4. A window cleaner comprising a base or support, a plurality of worm shafts carried thereby, a wiper on each shaft constructed to be reciprocated by the latter, resilient means for rotating said shafts in one direction, and means for rotating said shafts in the opposite direction and simultaneously increasing the tension on said resilient rotating means.

5. A window cleaner comprising a base or support, a plurality of worm shafts carried thereby, a wiper on each shaft constructed to be reciprocated by the latter, a coil spring surrounding each shaft and arranged to rotate the latter in one direction, and means for rotating said shafts in the opposite direction and simultaneously increasing the tension on said springs.

6. A window cleaner comprising a base or support, a plurality of worm shafts carried thereby, a wiper on each shaft constructed to be reciprocated by the latter, a sleeve surrounding the lower end of each shaft and secured thereto, a coiled spring located within said sleeve and arranged to rotate its shaft in one direction, and cords connected to the exterior of said sleeves and constructed to rotate said shafts in the opposite direction and simultaneously increase the tension on said springs.

7. A window cleaner comprising a base or support, a plurality of worm shafts carried by said base, a nut working on each shaft, a wiper detachably secured to each nut, means for rotating said shafts in unison, and means for simultaneously reversing the rotation of said shafts.

8. In a window cleaner, a wiper formed of



a sheet metal frame provided with an exterior flange and an open side, a sheet of fabric closing said open side of the frame and secured to the flanges thereof, flat springs  
5 secured within said frame and having free ends which normally engage the inner face of said fabric, and means for reciprocating said frame.

In testimony whereof we affix our signatures, in presence of two witnesses.

HENRY SPITZ.  
LEOPOLD HEFFNER.

Witnesses:

LOUIS HOFFMAN,  
HERMAN S. KRAMER.