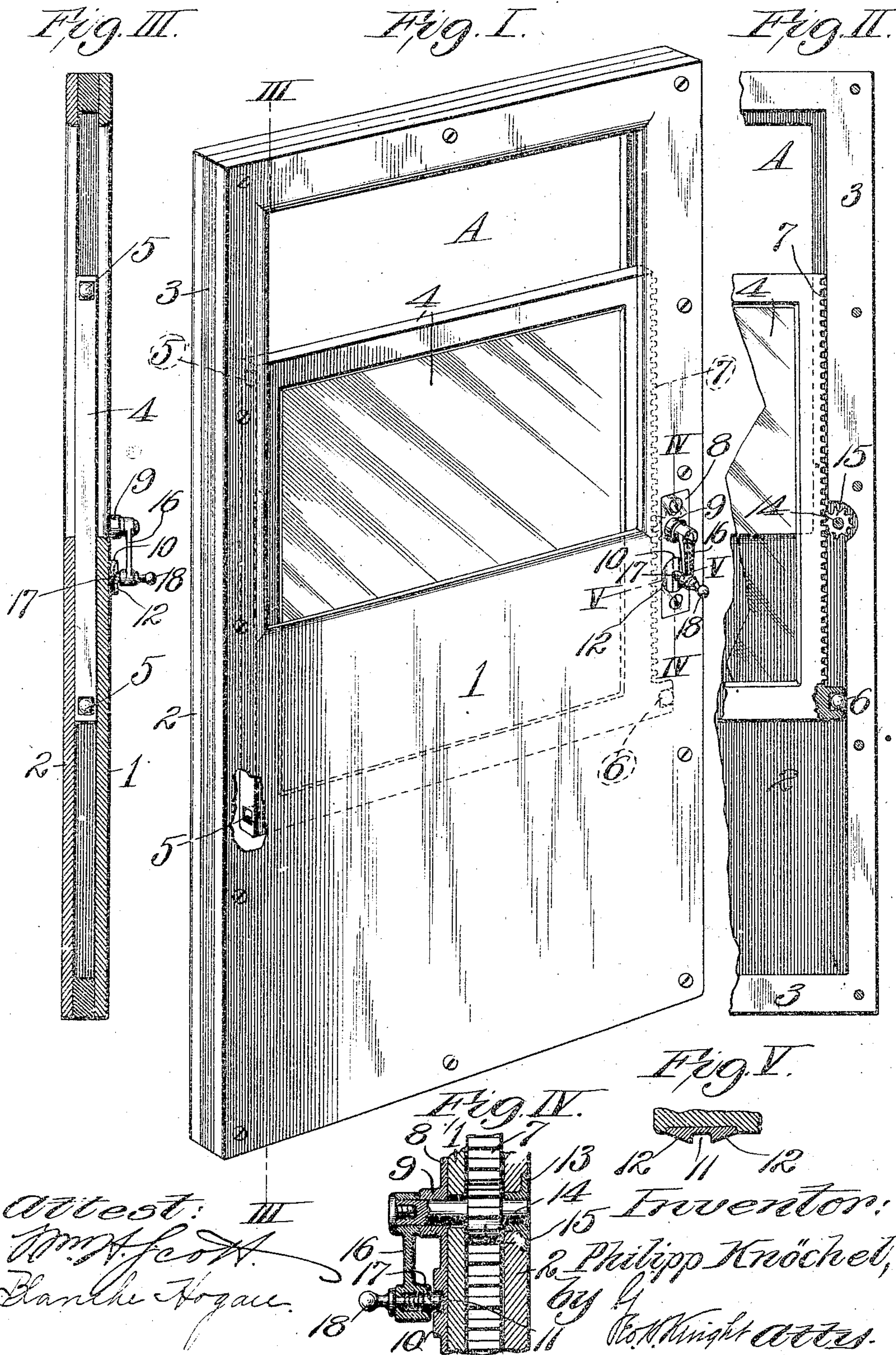


No. 855,788.

PATENTED JUNE 4, 1907.

P. KNÖCHEL.
WINDOW SASH OPERATING DEVICE.
APPLICATION FILED NOV. 3, 1906.



UNITED STATES PATENT OFFICE.

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WINDOW-SASH-OPERATING DEVICE.

No. 855,788.

- Specification of Letters Patent.

Patented June 4, 1907.

Application filed November 3, 1906. Serial No. 341,853.

To all whom it may concern:

Be it known that I, PHILIPP KNÖCHEL, a subject of the Emperor of Germany, residing in Hanau-on-the-Main, in the province of Hesse-Nassau, Germany, have invented certain new and useful Improvements in Window-Sash-Operating Devices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an improvement in operating devices for the sashes of windows and has more particularly for its object to produce a window sash operating means by which the sash may be readily and quickly raised and lowered and held from movement when in either a closed position or a partially open position.

Figure I is a perspective view of a window with the sash shown in partially open position. Fig. II is an elevation of the window with the sash shown in the position illustrated in Fig. I and the inner casement member of the window omitted. Fig. III is a vertical section taken on line III—III, Fig. I. Fig. IV is an enlarged vertical section taken on line IV—IV, Fig. I. Fig. V is an enlarged horizontal section taken on line V—V, Fig. I.

1 designates the inner casement member of a window, and 2 the outer casement member, in which is the sash receiving opening A. The casement members 1 and 2 are preferably of wood. 3 is an intermediate casement member of metal that is positioned between the inner and outer casement members and serves to separate said members to provide sash runways and also to provide durable guide surfaces for the window sash. The series of casement members are united by any suitable means, such as screws seated therein, as shown in Figs. I and II.

4 designates the window sash in which are seated pockets at one edge bearing balls or rollers 5 located at the top and bottom corners of the sash and adapted to ride against the adjacent vertical portion of the intermediate casement member 3. At the lower corner of the sash, opposite the edge containing the bearing balls 5, is a projection for guiding the sash having a pocket containing a bearing ball 6 that is adapted to ride against the adjacent vertical portion of the intermediate casement member. The style of the

sash with which the bearing ball 6 is associated is provided with a rack 7. The sash 4 is preferably of metal and therefore the bearing balls may readily operate in pockets therein without undue wear upon the portions of the sash in which they are seated and the teeth of the rack 7 may be readily produced directly in the sash without the necessity of providing a separate rack attached to the sash.

8 designates a latch plate attached to the inner casement member 1 and provided with a projecting journal bearing 9. This latch plate is also provided with a bolt receiving projection 10 that contains a socket 11 at the sides of which are inclines 12 leading to the socket.

13 is a journal bearing plate that is mounted in the outer casement member 2.

14 is a shaft journaled in the journal bearing of the latch plate 8 and in the journal bearing plate 13. This shaft has fixed to it a pinion 15 that is located between the inner and outer casement members and in mesh with the rack 7 of the sash 4.

16 is a crank fixed to the shaft 14 and by which said shaft is rotated for the purpose of causing coöperation of the pinion 15 with the rack 7 whereby the window sash is raised and lowered within the window casement.

17 is a locking bolt that is loosely seated in a socket in the crank 16 and has a handle 18 projecting from it at its outer end to be grasped by the hand of a person operating the crank for the purpose of imparting rotation to the shaft 14 and pinion 15. The locking bolt is surrounded by a spiral spring incased within the crank 16 and which exerts power to normally hold the locking bolt in an inwardly pressed position for engagement with the latch plate 8. The inner end of the locking bolt is provided with a shoulder that prevents the withdrawal of the bolt from the crank and said inner end is adapted to enter the socket in the latch plate for the purpose of holding the crank 16 from movement to maintain the window sash in any desired fixed position to which it has been moved by the coöperation of the shaft carried pinion 15 with the sash rack 7. The inclines upon the projection 10 of the latch plate provide tracks upon which the inner end of the locking bolt will freely ride when the bolt is in an inwardly pressed position and the sash is

moved by direct application of a person's hands thereto, with the result of causing rotation of the crank 16 to carry the locking bolt to the socket or seat 11 in which it fits
5 for the retention of the sash in a position to which it has been moved.

I claim:—

10 A window sash operating device comprising an inner member, an outer member, an intermediate member providing runways, and guide surfaces, a sash having a projection for guiding the sash and a rack at one edge, a plate formed with a journal bearing,

a socket and inclines leading to the socket, a shaft mounted in the journal bearing, a pin- 15 ion fixed to the shaft between the inner and outer members and in mesh with the rack, an operating crank fixed to the shaft and a spring locking bolt having a handle, loosely seated in the end of the crank and adapted to 20 be guided by the inclines so as to engage the socket in the plate.

PHILIPP KNÖCHEL.

In presence of—

KRIST KIRCHMANN,
HEINRICH WELSCH.