

UNITED STATES PATENT OFFICE.

CHARLES M. ANDREWS, OF CARYVILLE, TENNESSEE, ASSIGNOR OF ONE-HALF TO
CHARLES M. MOORE, OF CARYVILLE, TENNESSEE.

ROTARY VALVE.

No. 871,660.

Specification of Letters Patent.

Patented Nov. 19, 1907.

Application filed May 17, 1907. Serial No. 374,161.

To all whom it may concern:

Be it known that I, CHARLES M. ANDREWS, a citizen of the United States, residing at Caryville, in the county of Campbell and State of Tennessee, have invented new and useful Improvements in Rotary Valves, of which the following is a specification.

This invention relates to rotary valves. I may use my rotary valve with advantage in various connections, although it is of prime utility when employed in connection with a steam engine, as will hereinafter more particularly appear.

In the drawings accompanying and forming a part of this specification I show in detail one form of embodiment of the invention which, to enable those skilled in the art to practice the same, will be set forth at length in the following description, while the novelty of the invention will be included in the claims succeeding said description.

In said drawings I have shown valve mechanism embodying my invention as associated with or forming part of a double-acting engine, simply for the purpose of representing the mode of operation and advantages of the device.

The valve mechanism involving my invention is simple in construction, effective and rapid in action, and it has provision for reversing the stroke of the engine.

Referring to said drawings: Figure 1 is a sectional side elevation of a double-acting engine equipped with valve mechanism embodying my invention. Fig. 2 is a horizontal sectional plan of the same. Fig. 3 is a perspective view of the valve box. Fig. 4 is a transverse sectional elevation of one side of the engine equipped with said valve mechanism, the latter being in section. Fig. 5 is an inside face view of one of the sections of the boxing. Fig. 6 is a horizontal sectional view of the same. Fig. 7 is an inside face view of the rotary valve. Fig. 8 is a horizontal sectional view of the same. Fig. 9 is a face view of the reversing valve and also showing a means for oscillating the same. Fig. 10 is a sectional view on the line 10—10, Fig. 9. Fig. 11 is an inside view of a part of the boxing. Figs. 12, 13 and 14 are diagrammatic sections of certain ports and passages shown in the preceding figures and hereinafter more particularly described.

Like characters refer to like parts throughout the several figures.

In Figs. 1, 2, and 4 of the drawings I have shown a double-acting steam engine in connection with which my valve mechanism can be advantageously employed. From what has been stated it will be apparent, however, that the valve mechanism can be employed with other types of steam engines; in fact, it could be used with engines or motors using air, water, gas, or other fluid as the operating medium therefor. I will briefly describe said engine. The latter involves in its make-up two longitudinally aligned cylinders as 2 and 3 set opposite to each other and having their inner open ends in proximity. These cylinders 2 and 3 may be bolted or otherwise secured to the bearing 4 which may consist of a hollow casting and which is mounted on and suitably fastened to the bed or foundation plate 5. This bearing 4 supports for rotation the shaft 6 carrying fly-wheels as 7. Said shaft 6 is provided with two disks as 8 connected by the crank pin 9 jointed to the rods 10 which in turn are connected with the pistons 11 and 12 operative in the cylinders 2 and 3 respectively.

I may arrange above the cylinders 2 and 3 and connect thereto or otherwise suitably mount the hood or cap-plate 13 which prevents scattering of oil or other lubricant by the crank pin 9. The cylinders 2 and 3 have respectively longitudinal passages as 14 and 15 for the supply of steam against the outer faces of the pistons 11 and 12 respectively therein, and I have shown by arrows in Fig. 15 live steam as entering the cylinder 3 by way of the passage 15 and exhaust steam leaving the cylinder 2 by way of the passage 14, the two pistons during this time traveling toward the left in Fig. 2. When live steam is supplied into the cylinder 2 by way of the longitudinal passage 14, the longitudinal passage 15 serves as an exhaust passage and, in such a case, the two pistons 11 and 12 would travel toward the right in said Fig. 2.

The valve mechanism includes in its construction a boxing or casing such as that denoted in a general way by 16 and shown best in Fig. 3. Said boxing or casing consists in the present instance of an outer member as 17 and an inner member as 18, the two parts being bolted, riveted, screwed, or otherwise connected together at their margins, and each is preferably, although not necessarily, made of disk or circular form. The boxing or casing 16 is connected to the frame-work

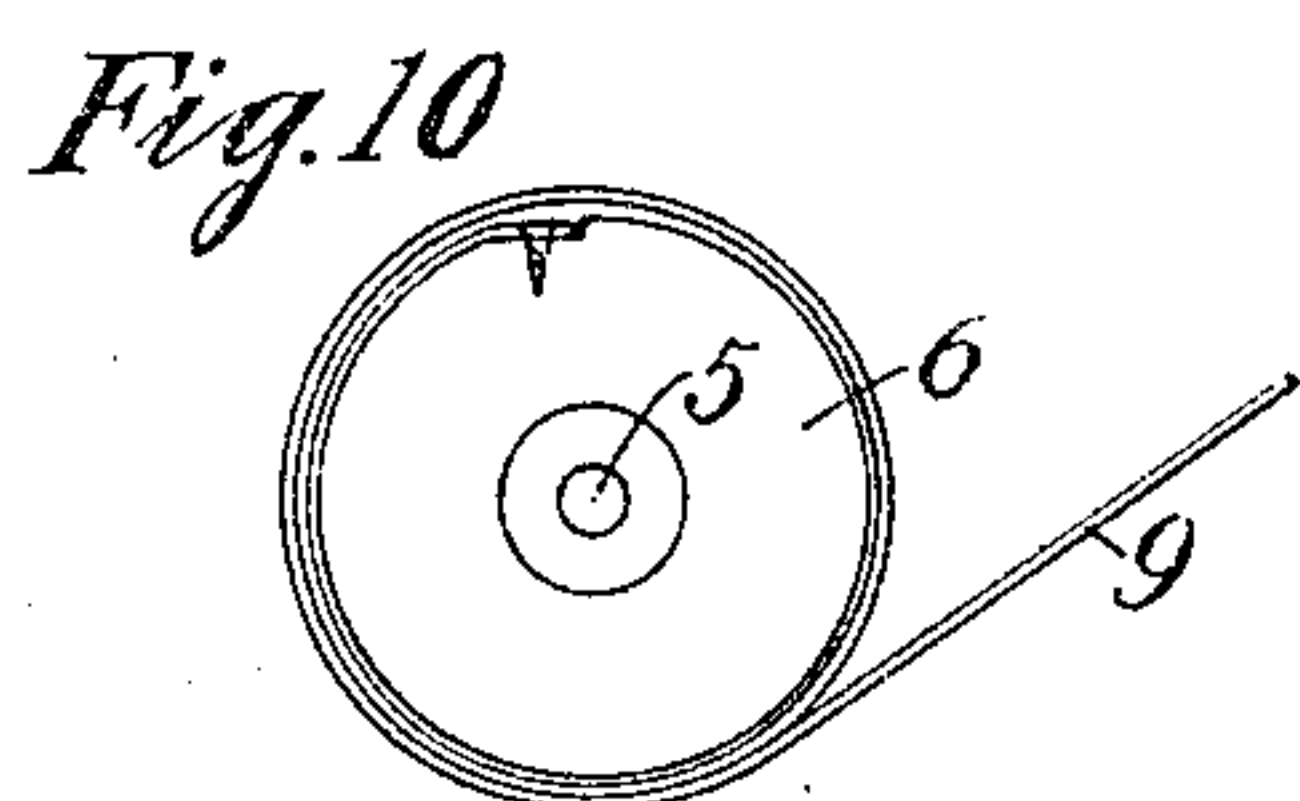
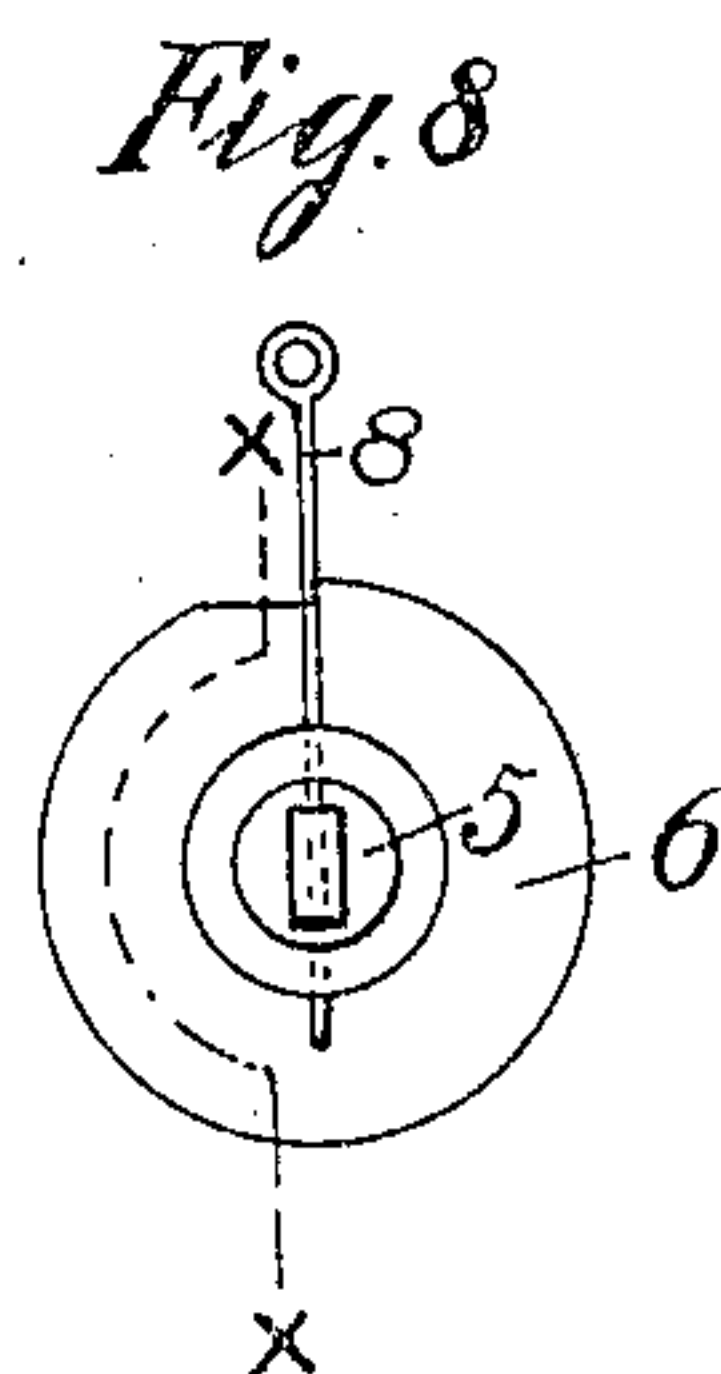
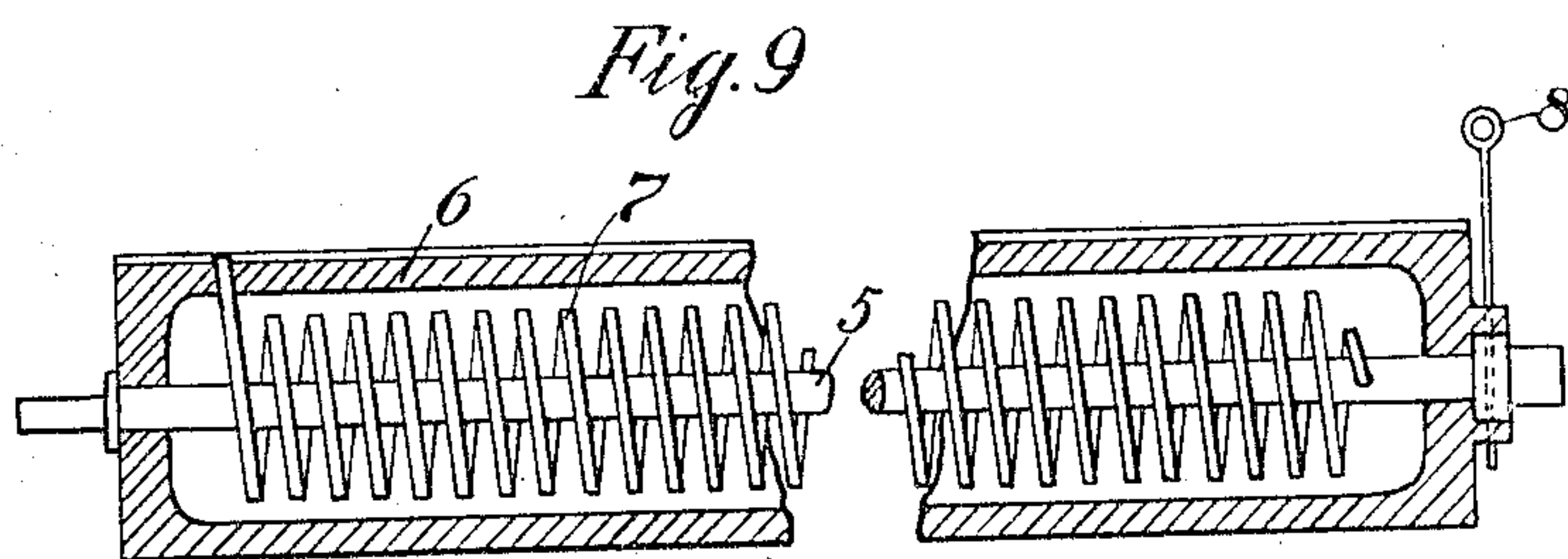
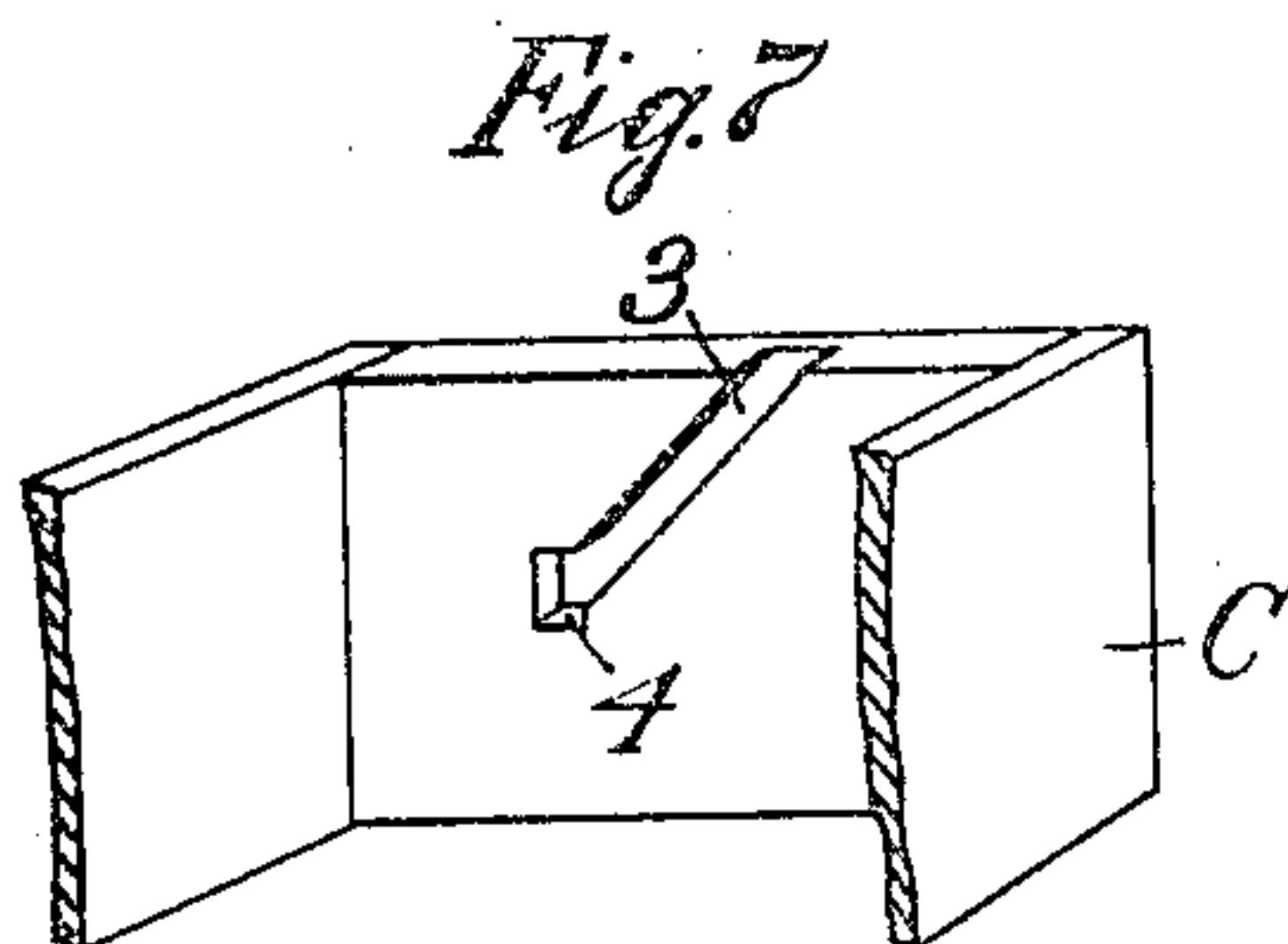
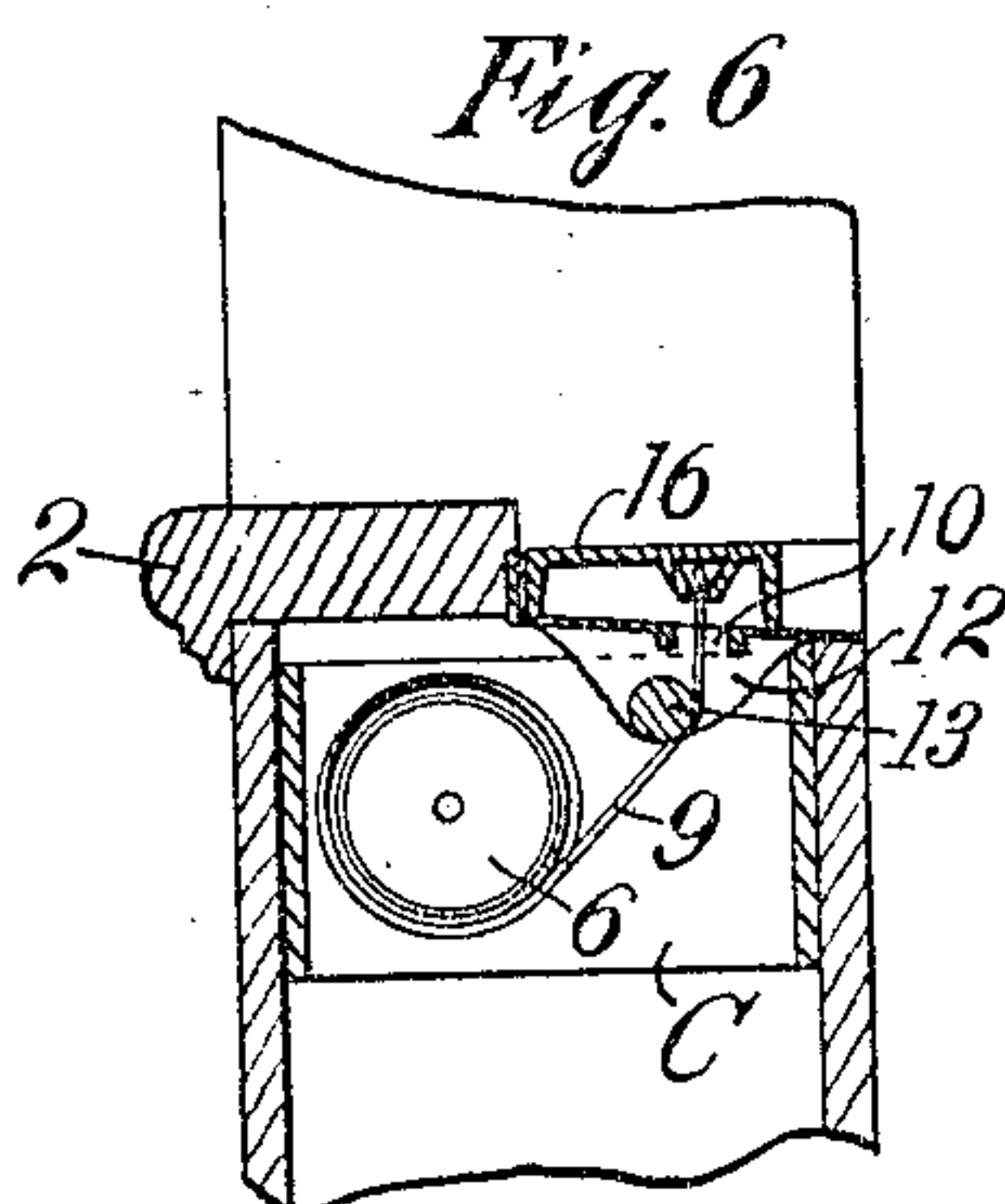
No. 871,661.

PATENTED NOV. 19, 1907.

A. B. ARCTANDER.
WINDOW SCREEN.

APPLICATION FILED NOV. 30, 1906.

2 SHEETS—SHEET 2.



Witnesses,
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UNITED STATES PATENT OFFICE.

AXEL B. ARCTANDER, OF ST. PAUL, MINNESOTA.

WINDOW-SCREEN.

No. 871,661.

Specification of Letters Patent.

Patented Nov. 19, 1907.

Application filed November 30, 1906. Serial No. 345,705.

To all whom it may concern:

Be it known that I, AXEL B. ARCTANDER, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Window-Screens, of which the following is a specification.

My invention relates to improvements in window screens, its object being particularly to provide a screen so arranged in connection with a slidable sash as to be extended with it when the sash is opened.

To this end my invention consists in the features of construction and combination hereinafter particularly described and claimed.

In the accompanying drawings forming part of this specification, Figure 1 is a front elevation of my improved screen, Fig. 2 is a section on line $x-x$ of Fig. 1, Figs. 3 and 4 are details of plates for securing the screen to the sash, Fig. 5 is a detail of a threshold plate, Fig. 6 is a section through the threshold, Fig. 7 is a detail of one end of the screen holding box, Fig. 8 is an elevation of one end of the screen roll, Fig. 9 is a section on line $x-x$ of Fig. 8, and Fig. 10 is an elevation of the opposite end of the screen roll.

In the drawings A represents the lower sash, B the frame-work of the window and the threshold. Supported below the threshold is a box C preferably of metal. The ends of the box are formed with interior downwardly inclined grooves 3 having sockets 4 at their lower ends to receive the ends of the roller shaft 5. The shaft 5 supports a roller 6 to which tension is supplied by the coil spring 7 interposed between the roller and shaft. In order to hold the roller under tension until it is placed in the box I form one end of the roller shaft and adjacent bearing in the box with alining openings through which is adapted to be thrust a pin 8. When the roller is supported within the box the pin 8 may be withdrawn. Suitably secured to the roller 6 is a screen 9 which, when the roller is in position in the box, passes upwardly through an opening 10 in the threshold plate 11. The threshold plate 11, as shown in Figs. 2 and 5, is formed with downwardly flanged ends 12 in which is journaled an anti-friction roller 13 for the screen. The threshold plate is suitably supported in the threshold, as shown in Fig. 2. The free end of the screen 55 is formed with an enlargement 14 adapted to

slidably fit within the socket piece 15 carried by the plate 16. The plate 16 is adapted to be detachably connected to the lower rail of the sash 8 through the medium of plates 17 secured to the lower rail of the sash and formed with slotted openings 18 corresponding with slotted openings 19 in the plate 16, through which slotted openings connecting bolts 20 are adapted to be passed. The plate 16, also carries downwardly extending flanges 21 which strike against the sill plate 11 when the sash is lowered, preventing the socket piece 14 and the bolts 20 from striking the sill plate. The parts being then adjusted to bring the bolts into the narrower portions of the slotted openings will firmly hold the plate 16 secured to the sash.

It will be evident that the screen may be quickly secured to or disconnected from the plate 16 and that the plate 16 may also be easily secured to or disconnected from the sash. When the sash is lowered the screen passes into the box thus being protected from the weather so that when the window is closed the screen is entirely out of sight and out of the way.

As will be seen by referring to Fig. 2 the screen travels along the inner face of the division strip 22. It will also be evident that my invention may equally well be applied to the upper sash, in which case the screen roller will be supported above the window frame.

1. The combination with a window frame and sash slidable therein, of a sill plate formed with a longitudinally extending slot, a tension roller supported below said slot, a screen carried by said roller and passing through said slot, a plate slidably supported at the lower edge of said sash, means carried by said plate for detachably supporting the free edge of said screen and flanges extending downwardly from the front and rear sides of said plate to a point below the screen supporting means, for the purpose set forth.

2. The combination with a window frame and sash slidable therein, of a sill plate formed with a longitudinally extending slot, a box supported below said plate and formed with inclined inner grooves in its end walls, the lower ends of said grooves having squared portions, a tension roller having its ends constructed to pass through said grooves and into the squared portions thereof, a screen carried by said roller and passing

through the slot in said sill plate, and a detachable connection between the free edge of said screen and said sash.

3. The combination with a window frame and a slidable sash supported therein, of a metal sill plate formed with a longitudinally extending slot, a box supported below said plate, said box being formed with an inclined groove in its end wall, and a squared portion at the lower end of said groove, a tension roller supported below said slot, the roller end fitting in the squared end of the groove, a spring shaft for said roller provided with

an opening registering with an opening in the adjacent end of the roller, a key fitting in said openings, a screen carried by said roller and extending through said slot, and a detachable connection between the free end of said screen and said sash. 15

In testimony whereof I affix my signature in presence of two witnesses. 20

AXEL B. ARCTANDER.

Witnesses:

H. S. JOHNSON,
HATTIE SMITH.