

(No Model.)

S. HARTSHORN.
SPRING SHADE ROLLER.

No. 293,457.

Patented Feb. 12, 1884.

Fig. 1.

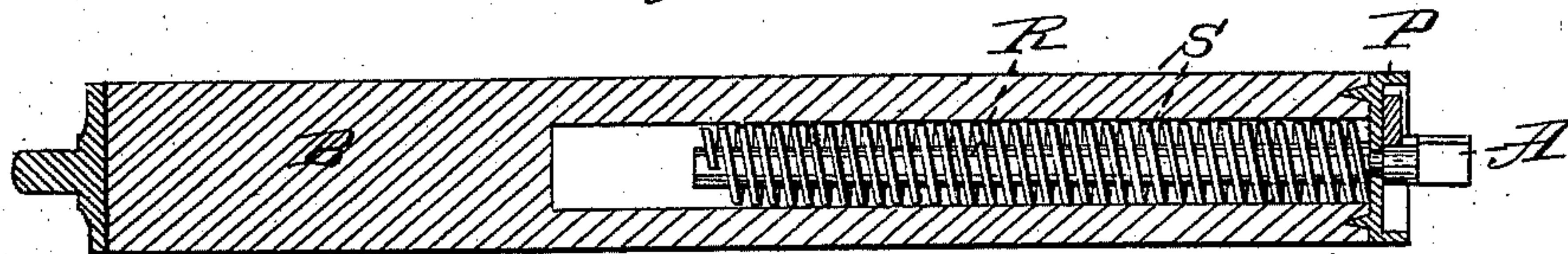


Fig. 2.

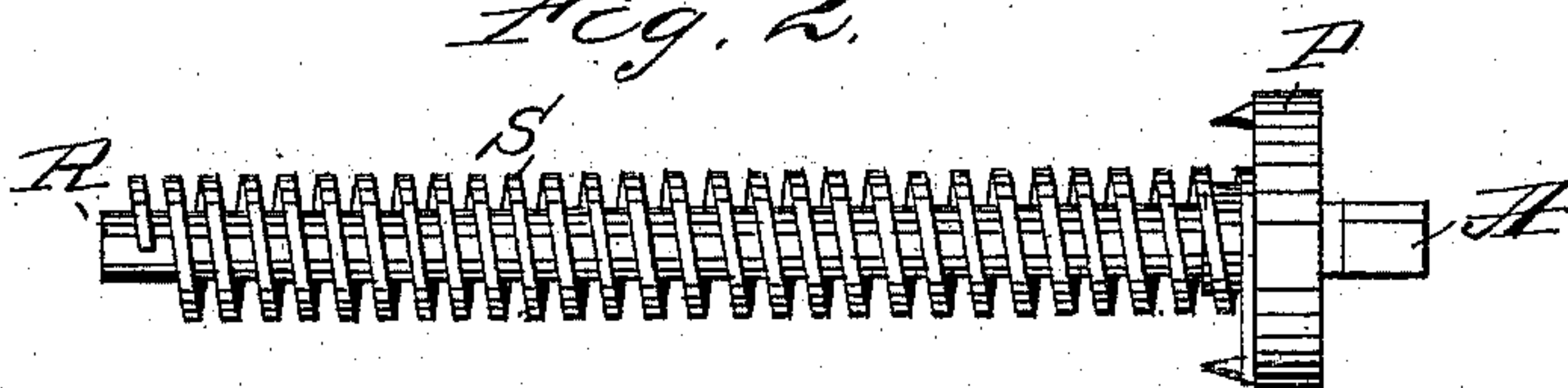


Fig. 3.

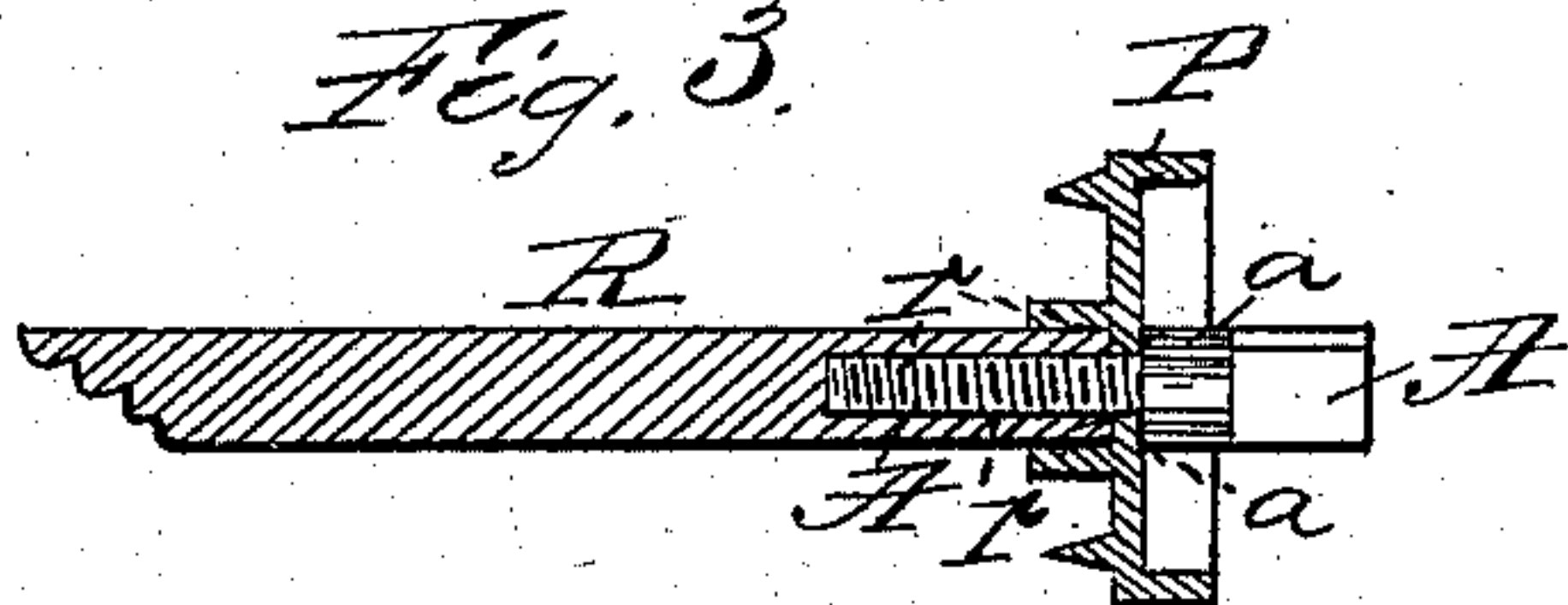
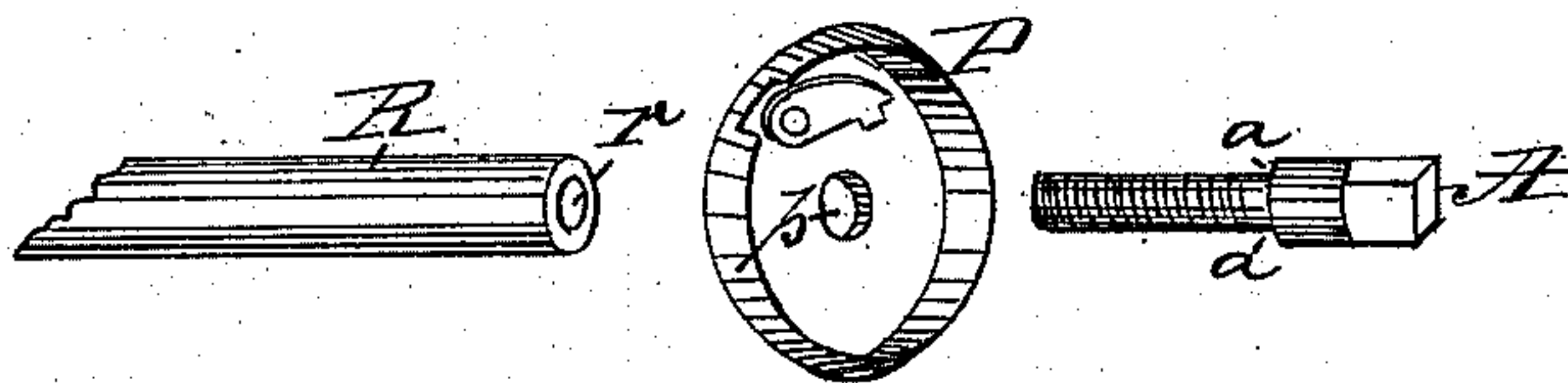


Fig. 4.



Witnesses,
Samuel Lea
Francis L. Gross

Inventor,
Stewart Hartshorn
per S. O. J. Law-
Attorneys.

UNITED STATES PATENT OFFICE

STEWART HARTSHORN, OF MILLBURN, NEW JERSEY.

SPRING SHADE-ROLLER.

SPECIFICATION forming part of Letters Patent No. 293,457, dated February 12, 1884.

Application filed November 8, 1883. (No model.)

To all whom it may concern:

Be it known that I, STEWART HARTSHORN, residing in Millburn, in the State of New Jersey, have invented an Improvement in Shade-Rollers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making a part of this specification.

My invention relates to that class of shade-rollers in which a spring mounted upon a spindle or shaft imparts motion to the roller for the purpose of winding up the shade, and has for its object an improved mode of connecting the spring with the roller, which is less expensive in construction and can be quickly effected.

In the drawings illustrating my improvement like letters indicate like parts.

Figure 1 is a sectional view of a shade-roller, showing the spring within the roller. Fig. 2 is a view of the complete spring, spindle, and end plate connected together and ready to be inserted in the roller. Fig. 3 is a sectional view of the outer end of the spindle, showing the mode of fastening the flattened end of the spindle, which fits in the bracket, to the shaft or rod extending through the spring, and the method of attaching the spindle to the end plate. Fig. 4 is a detached view of the outer end of the rod or shaft, the outer face of the end plate, and the flattened end of the spindle.

In spring shade-rollers the spring within the roller is coiled around a spindle or shaft, one end being attached to the spindle, which is fixed and does not revolve, and the other fastened to some part of the roller. In all methods of construction heretofore employed either the spring or its spindle, at their inner end, has been connected in some way directly with the roller. Generally the inner end of the spindle or shaft is supported centrally within the bored-out recess or cavity by a bearing, this bearing being sometimes fixed and sometimes capable of horizontal movement, so that the roller can freely revolve around the spindle when the shade is pulled down or wound up. When no such bearing is provided for the inner end of the shaft, the spring is attached in some way by its inner end to the interior of the cavity of the roller. In such method of construction more or less difficulty is experienced in effecting the inner

connection of the spindle or the spring, either in securing the bearing at the proper place within the cavity, to accommodate the length of the spindle, so as to allow the roller to turn freely, or in fastening the inner end of the spring to the interior of the roller.

My improvement is intended to do away with all the difficulty of fastening the inner end of the spring to the roller, or of providing a bearing for the inner end of the spindle or shaft; and it consists in so arranging the spring and spindle within the roller that there will be no connection of the inner end of the spring or of the spindle with the roller, thus doing away with the inner bearing of the spindle, and the necessity of connecting the spring with the roller in the cavity thereof, the spindle and spring being supported by the walls of the cavity.

In my improvement the inner end of the spring is attached to the spindle in any suitable manner, and the outer end to the roller, or more preferably to the end plate or head end, which is fastened to the end of the roller. The spindle having the spring mounted thereon is inserted within the roller so that the spring rests upon the walls of the hollow cavity, and is then secured at its outer end to the roller by any of the ordinary methods now in use, as illustrated in the drawings, which show the spindle R secured at its outer end to the end plate, P, and the spring S fastened at its inner end to the spindle and at its outer end to the plate P, and resting on the walls of the roller.

It will be noticed that the spindle is connected to the roller only at its outer end, where it is held by the plate P, or otherwise there secured, and its inner end is free from all contact with the interior of the roller, the spindle being prevented from dropping farther into the cavity by the tension of the spring, and that the spring itself rests upon and is supported by the walls of the cavity, which is just large enough to allow the roller to revolve around the spring without binding it.

The spindle at its outer end may be connected with the roller in any sufficient manner; but I prefer to use the mode shown in Figs. 3 and 4.

The flattened end of the spindle A, which is held in the bracket, screws into the end of

the spindle or shaft R, instead of being driven in, as is commonly done. This end A is provided with a shoulder, *a*, and the screw being put through the hole in the plate P, so the shoulder *a* rests against the outer face of the plate P, the shaft R and end A are screwed together until the end of the shaft comes against the inner face of the plate P. The two parts of the spindle are thus firmly attached together, and the spindle is securely held in its place in the cavity of the roller, independently of the tension of the spring, being prevented by the shoulder *a* on one side of the plate P and the end of the shaft R on the other, from sliding into or out of the roller. This plate and the spindle and spring, all connected together, are thus capable of being removed from the roller at pleasure by merely detaching the plate from the roller, and are attached to the roller merely by inserting the spindle and spring into the cavity of the roller and fastening the plate to the end of the roller. As the outer flattened end of the spindle is screwed into the shaft, there is less liability of splitting the latter than if it were driven in, and the shaft can be smaller, which will allow a smaller cavity in the roller. It will thus be seen that in my improved roller all connection of the spring or the spindle with the cavity of the roller is dispensed with, and all difficulty of securing the bearing within the roller is avoided; and as the cavity need only be large enough to allow the roller to revolve freely around the spring, the walls of the roller can be much thicker, thus not only making the roller stronger, but allowing longer tacks to be used for securing the shade to the roller without danger of having them project into the cavity, so as to interfere with the spring; and it is not necessary, in boring out the cavity of the roller, to have any regard to the length of the

spring or spindle, as the cavity may be much longer than the spindle without interfering with the action of the spring.

My improved method of arranging the spring within the roller may be used with any spring-roller, whether balance or stop rollers.

What I claim is—

1. In spring shade-rollers, the combination of the shaft or spindle and spring around the same with the roller and the cavity therein, substantially as described, so that any support for the inner end of the spindle or any connection of the inner end of the spring with the roller is dispensed with and rendered unnecessary.

2. In spring shade-rollers, the spindle R, the end plate, P, and spring S, connected together substantially as described, and combined with the roller so that the spring will rest upon the walls of the cavity thereof, as and for the purposes set forth.

3. In spring shade-rollers, the combination, with the roller, of the spindle R, attached thereto only at its outer end, the end plate, P, and spring S, secured at its inner end to the spindle and at its outer end to the plate, and the flattened bracket end A, connected together substantially as described, as and for the purposes set forth.

4. In spring shade-rollers, constructing the flattened or bracket end of the spindle with a shoulder and screw-tap, substantially as described, for attaching said spindle, the head or end plate of the roller, and the spring-carrying shaft together, as and for the purposes set forth.

STEWART HARTSHORN.

Witnesses:

S. NELSON WHITE,
SAMUEL LEA.