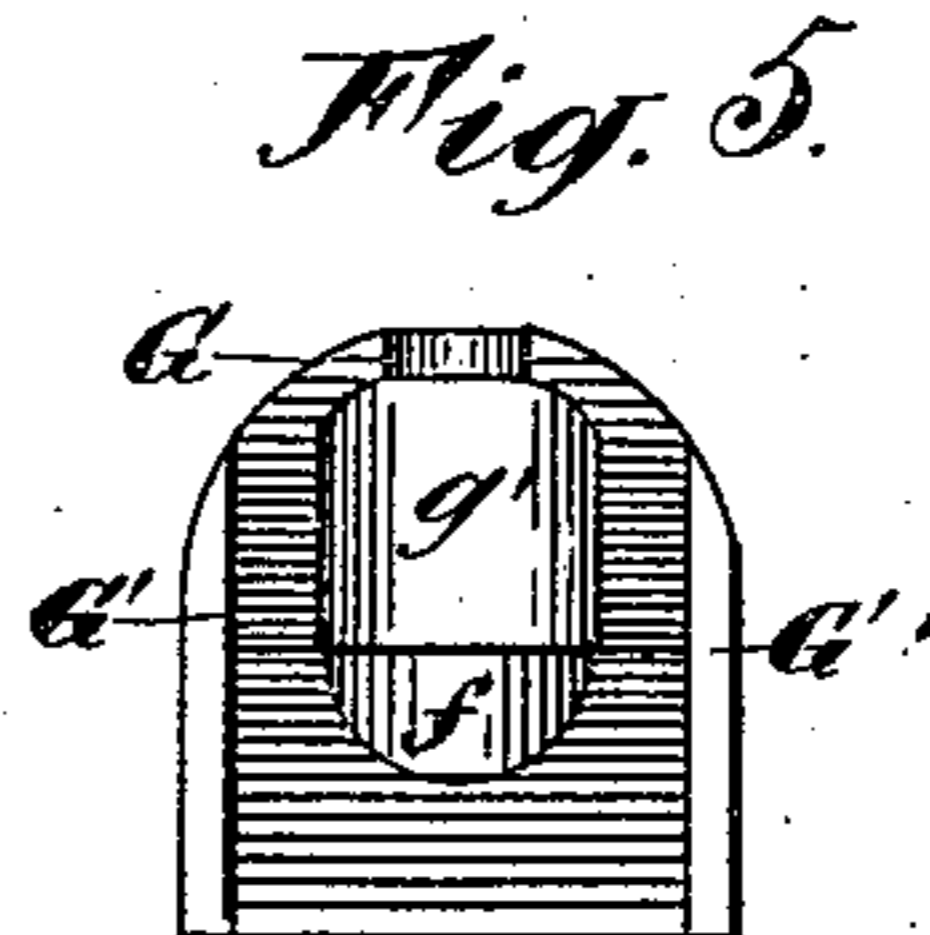
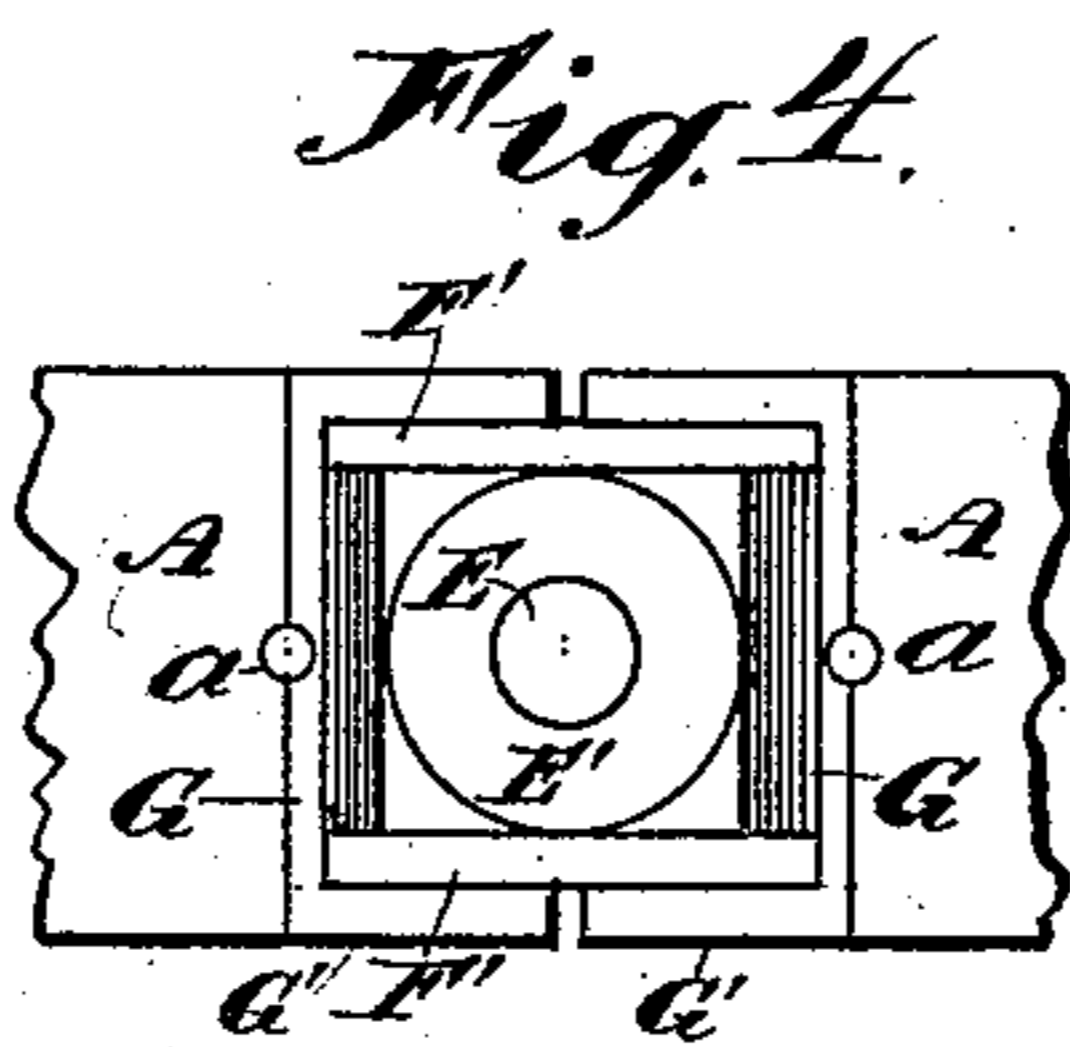
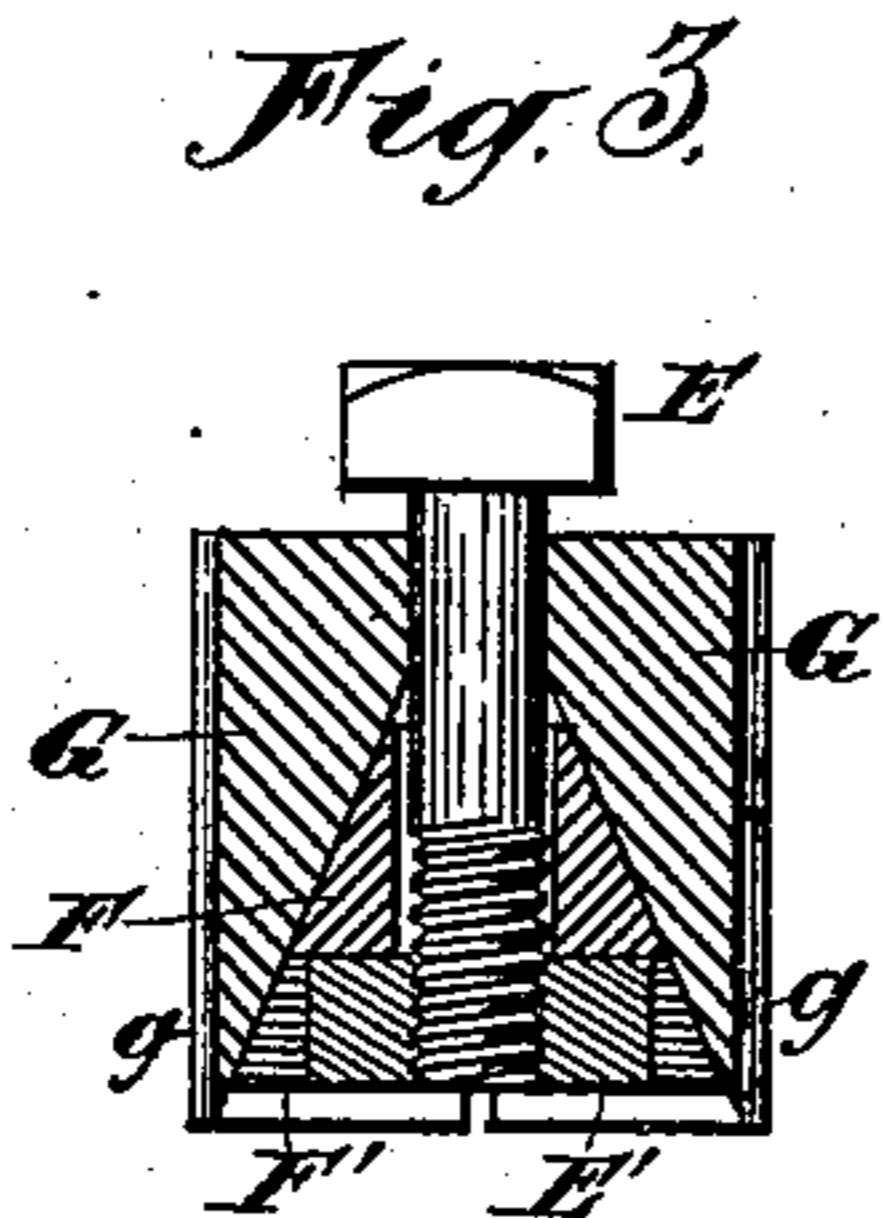
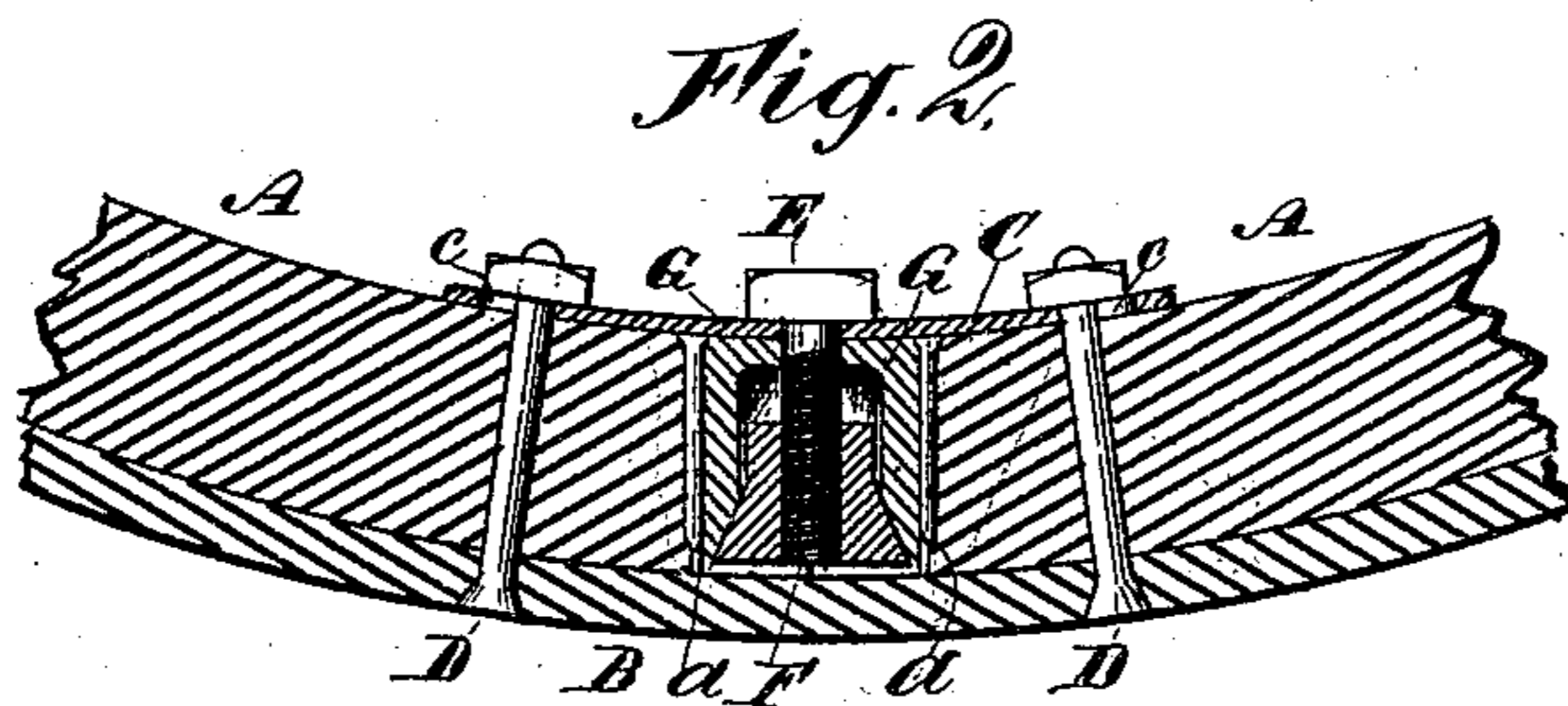
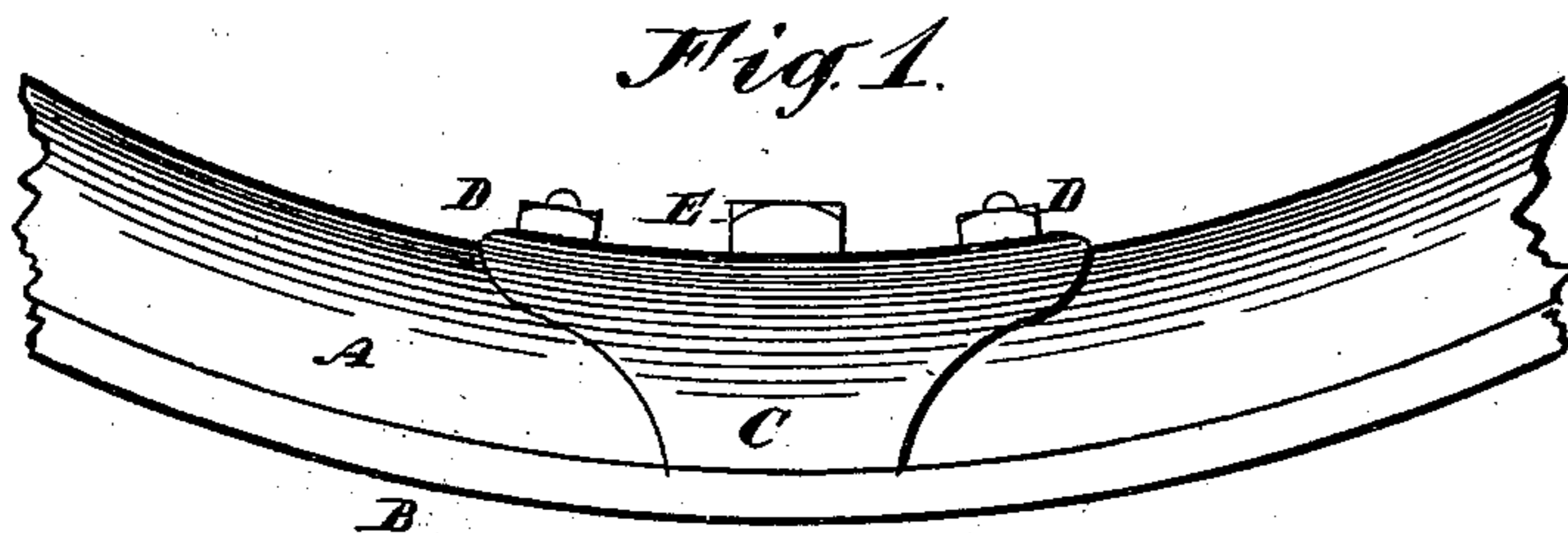


(No Model.)

C. HOFFMAN.  
FELLY EXPANDER.

No. 547,789.

Patented Oct. 15, 1895.



*Attest.*  
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*Atty.*

# UNITED STATES PATENT OFFICE.

CHARLES HOFFMAN, OF SPOKANE, WASHINGTON.

## FELLY-EXPANDER.

SPECIFICATION forming part of Letters Patent No. 547,789, dated October 15, 1895.

Application filed March 9, 1895. Serial No. 541,192. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES HOFFMAN, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented certain new and useful Improvements in Felly-Expanders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide means for expanding the felly of a wheel or reducing the same for the purpose of accommodating its circumference to that of the tire, according as the felly may be dry or damp, respectively. A device adapted to effect this object will be hereinafter fully set forth and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a device embodying my invention as applied to a fragmentary portion of a wheel. Fig. 2 is a central longitudinal section of the same. Fig. 3 is a central transverse section of the same without the felly or clip, but showing an improved manner of connecting the cap-screw with the wedge-block. Fig. 4 is a view of the same from the outside or periphery of the felly, the tire being removed. Fig. 5 is an internal elevation of one of the wedge-plates, showing, also, the wedge-block in position.

Similar letters of reference indicate corresponding parts.

A is the felly of a wheel, and B the tire thereof.

C is a clip covering the joint where the ends of the parts of the felly abut. This clip should extend to the tire in the middle each side and be wide enough in these side portions to cover the adjusting apparatus hereinafter to be described. The holes *c c*, through which the tire-bolts *DD* pass, should be slotted endwise, so as to allow the bolts to spread apart with the spreading of the adjacent ends of the felly. In the middle of the clip is a hole to receive a cap-screw *E*, engaging mediately or directly with a wedge-block *F*, set between two oppositely-inclined wedge-plates *G G*, the outer parallel faces of which abut upon the ends of the felly portions *AA*. The outline of these wedge-plates, as seen in

Fig. 5, should correspond with a section of the felly, practically filling the space between the felly ends and the clip. This is not absolutely essential, however, since the device is adapted to operate in connection with a felly considerably larger at the end than the face of the wedge-plate.

The wedge-plates are provided with lateral flanges *G' G'*, which serve to retain the wedge-block between them, the wedge-block, in connection with said flanges, keeping the wedge-plates true and parallel at the sides. Across the face of each wedge-plate, abutting on the end of the felly, is a groove *g* to receive a pin or nail *a* after the plates are both in position. It will be seen by reference to Figs. 2 and 4 that these pins lie partly in the grooves in the wedge-plates and partly in the wood of the felly, so there can be no lateral displacement of the plates even though the clip should not embrace them closely at the sides.

The wedge-block *F* is made with two diverging faces corresponding to the incline of the inner faces of the wedge-plates. The connection of the cap-screw may be direct, as by screw-threading the hole in the block, which is the form shown in Fig. 2. In this case it is desirable to form a small hub or boss *f* at the smaller end, so as to give sufficient strength to the screw-thread inside. A corresponding cavity *g'* is formed in each of the wedge-plates to receive said boss, with inclined faces each side to take the corresponding faces of the wedge-block.

An improvement in the form of the wedge-block is shown in Figs. 3 and 4. In this the block itself is not screw-threaded, but is recessed at the larger end to take a common nut *E'*. The nut is held in place and prevented from turning by lateral flanges *F' F'*, which also serve to extend the inclined bearing-surface. In the case of this construction the boss on the wedge-block and the cavity in the wedge-plates may be dispensed with. A further advantage in this construction is that the drilling and tapping of the wedge-block are made unnecessary, and the parts may be made complete in the casting and so very cheaply, a common bolt and nut serving for adjustment.

The operation of the device will be very

readily understood. To tighten the felly in the tire, it is but necessary to loosen the nuts of the bolts D D and screw up the cap-screw E a little, thus spreading the inclined plates G G and expanding the felly. To relieve the felly, as is sometimes necessary in damp weather to prevent the wheel from "dishing," the operation is the same except that the cap-screw is turned outwardly as much as may be necessary. It is of course necessary that the nuts of the bolts D D should be tight when the wheel is in use. The adjusting-screw should also be drawn up tightly enough, so as not to work loose with the motion of the wheel. It is to be observed that the adjustment is effected without moving the cap-screw lengthwise at all, the head always remaining in contact with the clip C, which serves as the washer for it. This gives to the device a neat and symmetrical appearance at all times and regardless of the adjustment.

The device is of such a nature as to be easily and quickly applied to a wheel, and even without removing the tire. The abutting ends of the felly being exposed, it is but necessary to saw a portion off the end of one or both, leaving a gap of the width of the expander when in its most contracted position. The connected parts of the expander are then slipped into place and fastened thereby driving a pin or nail in each groove *g*, said pin sinking into the end of each piece of the

felly, as before mentioned. The clip is then put in position and the screw E inserted. It is not even absolutely necessary, though, of course, desirable, that the clip be fastened on the felly by the bolts D D, as the tightener itself will serve to hold it in place. So by either dispensing with the bolts D D or using screws inserted from the other direction the device may be wholly attached without removing the tire. The same may be done using the bolts D D, as shown, provided the clip is fitted to bolts already in position, or by putting the bolts through new holes bored through both tire and felly.

Having thus described my invention, I claim—

In a felly expander, the combination of the felly A A, the clip C adapted to close the gap between the ends of the felly and having slotted holes for bolts D D, the bolts D D, the inclined plates G G having grooves *g g* in the plane, outer faces, the interposed wedge-block F, the nut E' seated at the larger end thereof, the bolt or screw E, and the pins *a a* driven into said grooves, and partly embedded in the felly end, as described.

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

CHARLES HOFFMAN.

Witnesses:

GUSS W. ROCHE,

CHAS. LIFTCHILD.