

No. 675,463.

Patented June 4, 1901.

W. E. BOYCE.

DEVICE FOR ALINING WRIST PINS AND PISTONS.

(Application filed Oct. 19, 1900.)

(No Model.)

Fig. 1.

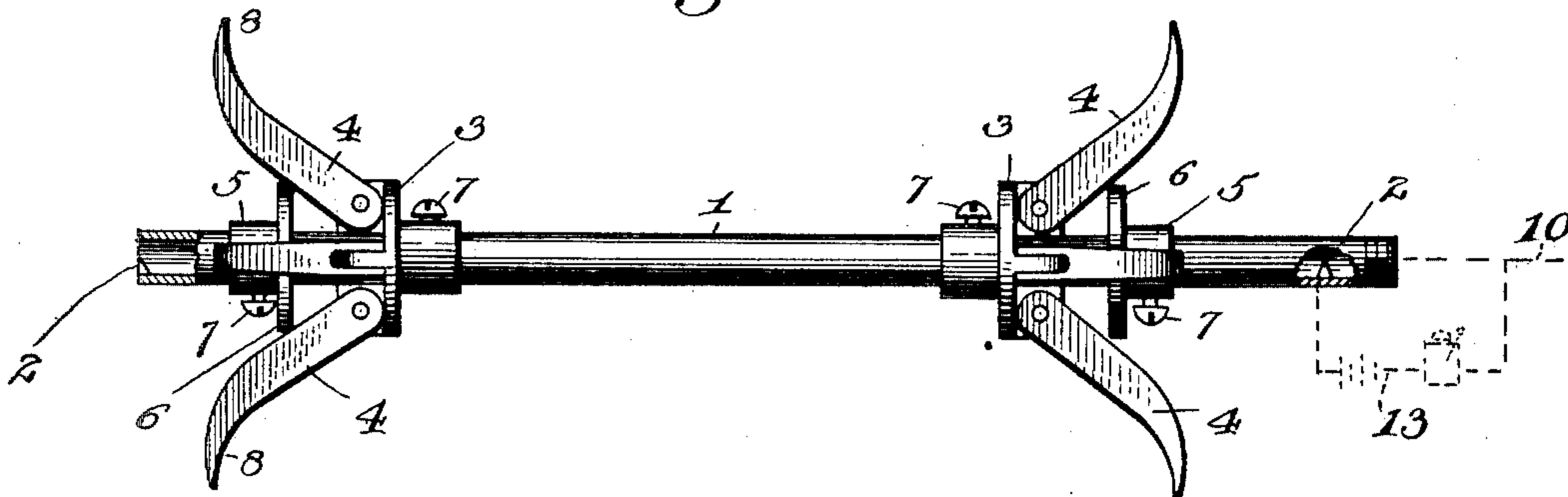


Fig. 2.

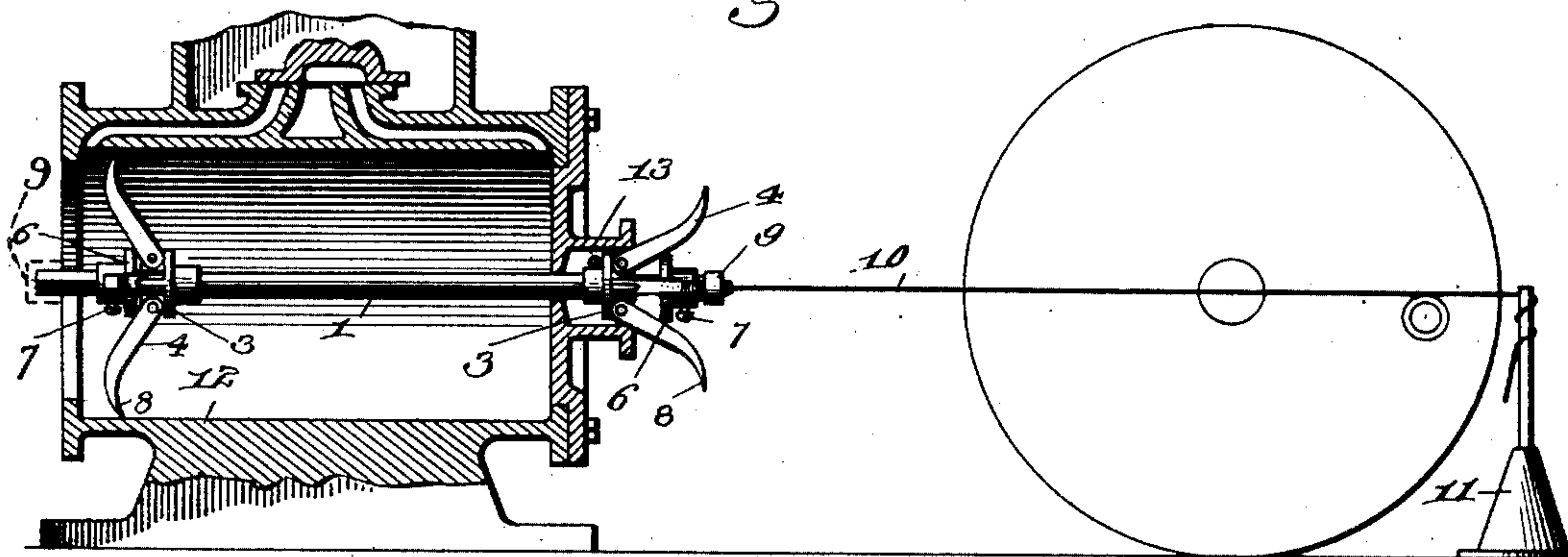
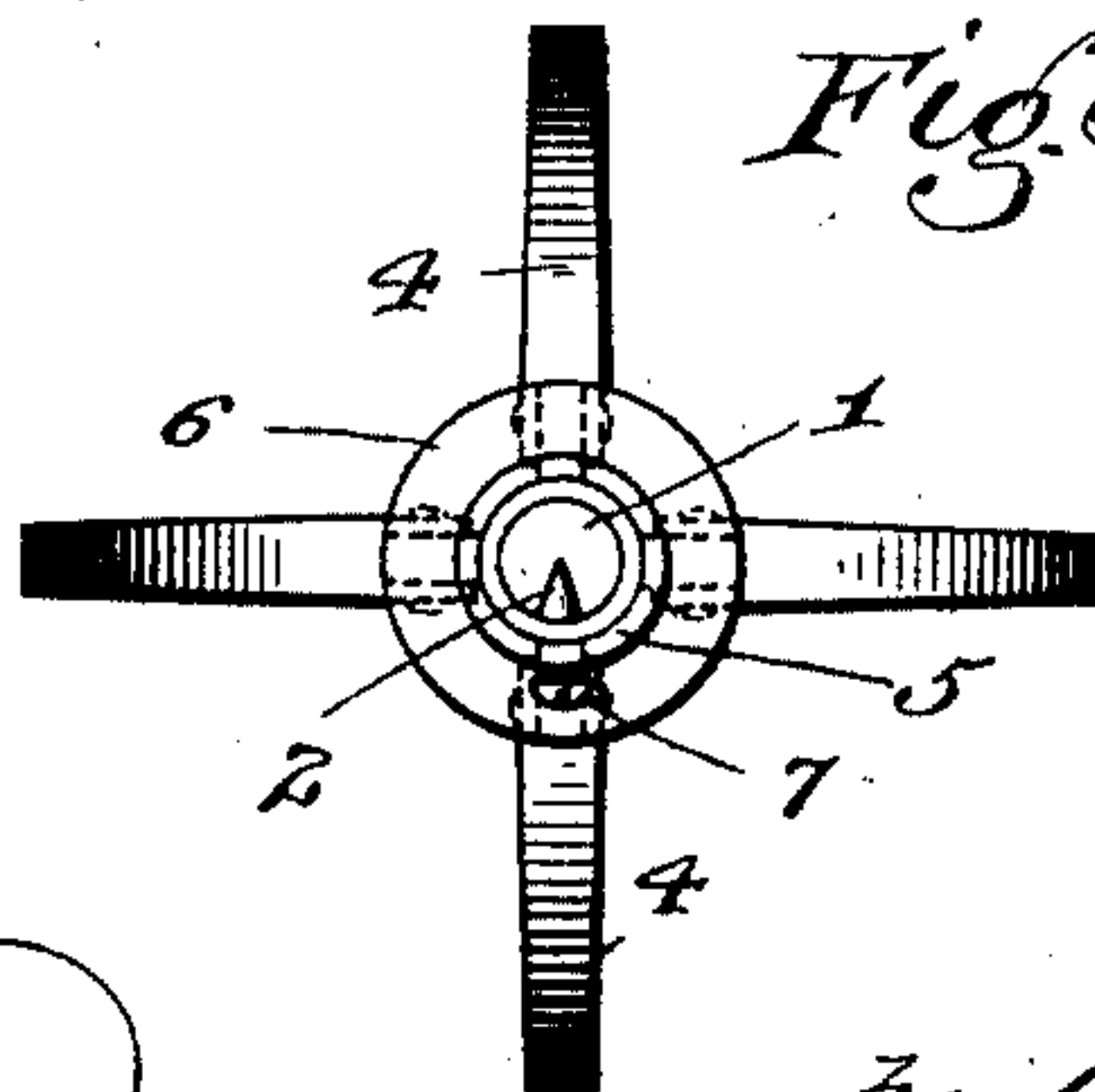


Fig. 3.



Witnesses

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WARREN ELMER BOYCE, OF PIERCE CITY, MISSOURI.

DEVICE FOR ALINING WRIST-PINS AND PISTONS.

SPECIFICATION forming part of Letters Patent No. 675,463, dated June 4, 1901.

Application filed October 19, 1900. Serial No. 33,601. (No model.)

To all whom it may concern:

Be it known that I, WARREN ELMER BOYCE, a citizen of the United States, residing at Pierce City, in the county of Lawrence and State of Missouri, have invented a new and useful Device for Alining Wrist-Pins and Pistons, of which the following is a specification.

My invention relates to devices for alining wrist-pins and pistons; and it has for its object to produce a device of this kind which can be quickly applied and will enable the engineer or other person to place the cylinder, disk, and wrist-pin in perfect alinement very quickly and easily.

With this object in view my invention consists in the improved construction and novel arrangement of parts of an engine-liner, as will be hereinafter more fully set forth.

In the accompanying drawings, in which the same reference-numerals indicate corresponding parts in each of the views in which they occur, Figure 1 is a side elevation of my improved engine-liner. Fig. 2 is a longitudinal sectional view of the same in use, and Fig. 3 is an end view.

In building engines and setting them up it is necessary that the center of the crank-shaft and the wrist-pin be as nearly in perfect alinement with the center of the cylinder and its glands as it is possible to get them. With my improved liner this can be readily accomplished by placing one portion of the liner within the cylinder and the gland or other portion of the engine and having another portion extended past the central point of the disk or crank-shaft and in alinement with the center of the wrist-pin or crank.

In practicing my invention I provide a tube 1 of any suitable length and dimensions, each end of which is provided with a sight or point 2, which terminates exactly at the center of the tube. Adjustably mounted upon the tube near each end is a collar 3, to which is pivotally secured a series of radially-arranged arms 4, preferably four in number. Adjustably secured upon the tube adjacent to each set of arms or calipers is a collar 5, which is preferably provided with a disk 6. The collars are each provided with a set-screw 7, by means of which it may be secured to the

tube at any desired point, and the tips or outer ends of the arms are preferably curved slightly outward, as shown at 8, to permit of their engaging with a very small bore when the arms are placed almost parallel with the tube. Detachably secured at one end of the tube is a cap 9, from the center of which extends a cord 10, the opposite end of which is adapted to pass over a sight-staff 11.

In using my improved engine-liner the engine is first secured in the position which it is to occupy, and the cylinder-head, the follower-head, the piston, the cross-head, and the connecting-rod are all removed. The tube is then inserted through the cylinder and the gland and centered therein by moving the adjusting sleeves or disks up against the caliper-arms until the tips of one set of arms contact with the bore of the cylinder 12 and the intermediate portions of the other set of arms contact with the gland 13, as shown in Fig. 2. The sight-staff 11 is then placed a slight distance beyond the center of the disk or crank-shaft and adjusted until the notch in the top of it is in perfect alinement with the sights within the tube. The cap is then screwed on the end of the tube and the cord drawn from there to the notch in the top of the sight-staff. In this position the cord will indicate the horizontal plane in which the center of the shaft or disk must be located and also the vertical plane in which the center of the wrist-pin or crank should revolve. As the expansion of the caliper-arms will center the tube within the cylinder and the gland or other portion which is to be alined and the sight-staff can be quickly adjusted and the cord stretched, it will be seen that the parts of the engine may be quickly and accurately assembled. The liner is made to aline by both counterbores, as well as counterbore and piston-gland, and it can also be used for adjusting the cylinder in relation to the shaft or disk by placing the tube within the cylinder and then moving the cylinder until its sights are in alinement with the top of the sight-staff or the center of the shaft. By moving the adjusting-disks outward the arms will collapse or fold toward the tube and the instrument can be easily withdrawn from the cylinder. One of the collars is pref-

erably made long enough to project beyond the end of the gland, so that the calipers can be adjusted from the outside of the gland.

5 Instead of placing the cap 9 on the end of the tube adjacent to the wrist-pin it could be placed upon the other end, as shown in dotted lines in Fig. 2, and the cord be passed entirely through the tube and onto the sight-staff.

The cord or a portion of it may be of metal
o and connected with an electrical battery 13, as shown in dotted lines in Fig. 1, the battery being also connected with the innermost sight point or pin, so that when the cord con-
5 tacts with the pin a bell will be sounded and indicate that the cord lies centrally within the tube. In this manner the free end of the cord may be moved about freely until the sig-
nal is given, which will indicate that the posi-
tion that the cord occupies at that instant is
o in a line with the wrist-pin and with the center of the crank-shaft. By fastening the cord in that position the parts may be properly as-
sembled in the same manner as heretofore de-
scribed.

5 Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an engine-liner, the combination, with a tube provided with sights, of means for cen-

tering said sights within the bore of the cyl- 30
inder, a cord, one end of which is provided with means for securing it at the center of the tube and the other end is adapted to be secured to the top of the sight-staff, substan-
tially as described. 35

2. In an engine-liner, the combination, with a tube provided with sights, of adjustable arms radially secured thereto, in position to center said tube in the bore of the cylinder, a sight-staff, and a cord adapted to be de- 40
tachably secured to one end of the tube and to the sight-staff, substantially as described.

3. In an engine-liner, the combination, with a tube provided with sights in the axis there-
of, of collars adjustably secured at each end 45
of said tube, arms pivotally secured to each of said collars in position to be moved radi-
ally relatively to the tube, adjusting-disks secured to the tube adjacent to said arms, a sight-staff, a cord, one end of which is pro- 50
vided with a cap adapted to be secured to the end of the tube, and the other end is adapted to be secured to the sight-staff, substantially as described.

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Witnesses:

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