

(No Model.)

J. J. BATES.  
STUFFING BOX FOR PROPELLER SHAFTS.

No. 571,741.

Patented Nov. 24, 1896.

Fig. 1.

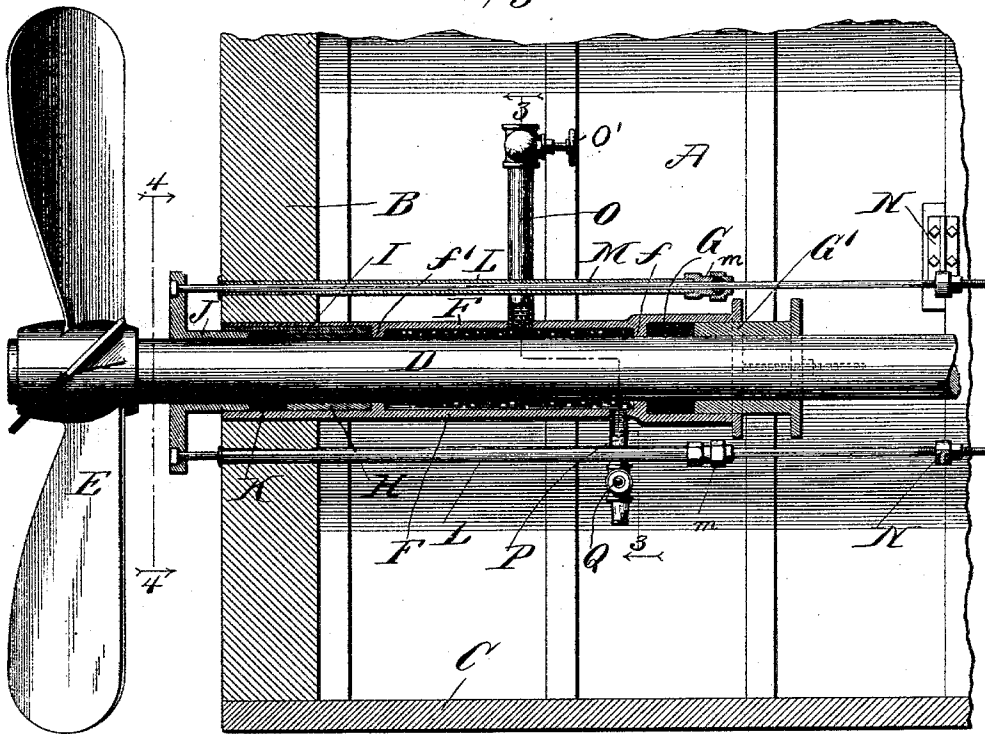


Fig. 2.

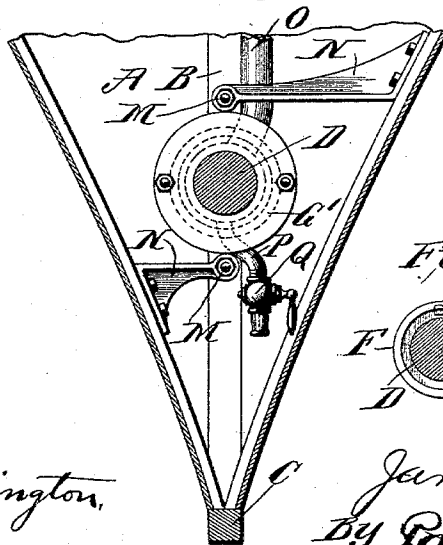


Fig. 4.

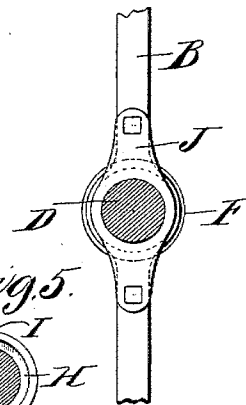
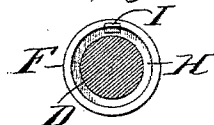


Fig. 5.



Attest:  
G. A. Pennington,  
J. R. Cornwall

Inventor:  
James J. Bates  
By Paul Bakewell  
Atty.

# UNITED STATES PATENT OFFICE.

JAMES J. BATES, OF ST. LOUIS, MISSOURI.

## STUFFING-BOX FOR PROPELLER-SHAFTS.

SPECIFICATION forming part of Letters Patent No. 571,741, dated November 24, 1896.

Application filed September 5, 1896. Serial No. 605,029. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES J. BATES, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Stuffing-Boxes for Propeller-Shafts, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a longitudinal sectional view through the stern of a vessel, showing my improved stuffing-box in position. Fig. 2 is a vertical sectional view through the vessel, looking toward the stern thereof. Fig. 3 is a sectional view on line 3 3, Fig. 1. Fig. 4 is a view taken on line 4 4, Fig. 1, looking in the direction of the arrow. Fig. 5 is a rear view of the sleeve, showing the propeller-shaft in cross-section, the packing-gland being removed to more clearly show the construction of the key which holds the collar in place.

This invention relates to a new and useful improvement in stuffing-boxes for propeller-shafts; and it consists in the means hereinafter described for tightening up the packing at the rear end of the shaft without necessitating the vessel's removal from the water.

Another feature of invention resides in the construction of a hollow sleeve through which the shaft passes, said shaft being packed at each end of the sleeve, leaving an intermediate chamber which is adapted to receive a lubricant, which lubricant also acts as a signal to indicate the presence of water in the sleeve, which results from the wearing of the packing-boxes or a loose packing.

Other features of invention reside in the construction, arrangement, and combination of the several parts of my device, all as will hereinafter be described and afterward pointed out in the claims.

In the drawings, A indicates the hull of a vessel, B the stern-post, and C the keel, all of such parts being of ordinary construction.

D indicates the propeller-shaft, which has mounted on its rear end a propeller E, as is usual.

F indicates a sleeve through which the rear end of the propeller-shaft passes, said sleeve being formed with inwardly-extending

flanges *f* and *f'* near its ends, which tend to center the shaft in the sleeve. The forward flange *f* acts as a shoulder for the packing G, which is compressed by a suitable gland G', as usual. The rear flange *f'* acts as a shoulder against which a collar II abuts, said collar being keyed to the sleeve by a key I, whose rear end is cut away, as shown in Figs. 1 and 5, to permit the introduction of a packing-gland J from the exterior, which gland compresses suitable packing K therebetween and the collar II.

L indicates hollow tubes or pipes which are fitted in the stern-post, through which tubes pass rods M, the rear ends of which are secured to the gland J, while the forward ends of the rods are threaded and pass through brackets N, secured to the hull of the vessel, said threaded ends receiving nuts, by which means the rods may be advanced and the gland J made to compress the packing at the rear end of the sleeve. *m* indicates packing-nuts arranged on the front ends of the tubes for preventing the entrance of water into the hull through these tubes.

Between the flanges *f* and *f'* is a chamber which is adapted to receive a lubricant for lubricating the bearings of the propeller-shaft in the sleeve. Extending upwardly from this chamber is a reservoir O, which is preferably left open at its top, while extending from the bottom of the chamber is a short section of pipe P, on the lower end of which is arranged a cock Q. It is obvious that this cock could be arranged so as to lead directly from the chamber and a short section of pipe P be dispensed with without in the least departing from the principle of my invention.

The operation of the device is as follows: The parts being in the position shown in Fig. 1 any wear that may take place at either end of the sleeve may be taken up on the inner end by tightening the gland G' and on the outer end by turning the nuts on rods N against their respective brackets. Should wear at the outer end take place to such an extent that water would be admitted, as would perhaps happen if attention were not given to the packing frequently, the grit carried by the water would soon grind the bearing-surfaces to such an extent as to cut them. In order to prevent this, by notifying the engi-

neer of the presence of water in the sleeve, the reservoir O is left open at its top, as above described, and immediately that water enters into the oil-chamber the oil, being the lighter, will overflow, and, if desirable, such overflow could be conducted to the engineer's room, where it would be readily seen. After the glands are tightened, upon such notification, the cock Q, leading from the bottom of the chamber, is opened to permit the water to flow out, and when the water is removed oil is placed in the reservoir O to replace that which was lost in the overflow or might have escaped through the cock Q.

O indicates a valve arranged at the top of the reservoir O, said valve being designed to be used in the event that the packing or wearing surfaces should be so worn that tightening the glands would not prevent the entrance of water into the oil-chamber. In such an event by closing the valve the water would be prevented from rising through the reservoir, and the device would operate practically the same as similar devices now in use.

The construction, as above described, is simple, cheap, and very efficient as a packing. It is advantageous over the forms of packings now in existence in that a propeller-shaft runs through a lubricant instead of gritty water, as is now the case. By the provision of means for notifying the attendant of the presence of water in the sleeve the packings can be adjusted so as to save the propeller-shaft from wear. The construction is such that it may be applied to existing vessels without necessitating any material change in the arrangement of machinery or other parts of the vessel.

I am aware that many minor changes in the construction, arrangement, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of the invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination with a propeller-shaft, of a sleeve surrounding the same, packing, and packing-glands at each end of the sleeve, rods which engage the outside or rearmost packing-gland, said rods extending to the interior of the hull, and means for tightening

said rods so that the gland compresses the rearmost packing; substantially as described. 55

2. The combination with a propeller-shaft, of a sleeve surrounding the same, packing, and packing-glands arranged in each end of the sleeve, the rearmost packing-gland being located outside of the hull of the vessel, and means located inside the hull of the vessel, and connected to said outside gland, for tightening said gland; substantially as described. 60

3. The combination with a propeller-shaft, of a sleeve surrounding the same, and having inwardly-extending flanges near each end thereof, a collar arranged at the rear end of the sleeve and abutting against the rearmost of said flanges, a key cooperating with said collar and sleeve, a packing-gland, packing interposed between said gland and collar, and means located in the hull of the vessel and attached to said gland for tightening the same; substantially as described. 65 70

4. The combination with a propeller-shaft, of an oil-chamber surrounding the same, and a reservoir connected to said chamber and open at its top, whereby, upon the presence of water in said chamber, the oil in the reservoir is caused to overflow; substantially as described. 75 80

5. The combination with a propeller-shaft, of an oil-chamber surrounding the same, a reservoir connected to said chamber, said reservoir being open at its top, whereby, upon the presence of water in said chamber, the oil in the reservoir is caused to overflow, and a cock in the bottom of the chamber for withdrawing the water; substantially as described. 85 90

6. The combination with a propeller-shaft, of a sleeve surrounding the same, packing in each end of the sleeve, whereby, a chamber is formed in said sleeve, an oil-reservoir connected to the top of said chamber for supplying the same with oil, and a cock leading from the bottom of the chamber; substantially as described. 95

In testimony whereof I hereunto affix my signature, in presence of two witnesses, this 27th day of August, 1896. 100

JAMES J. BATES.

Witnesses:

F. R. CORNWALL,  
HUGH K. WAGNER.