

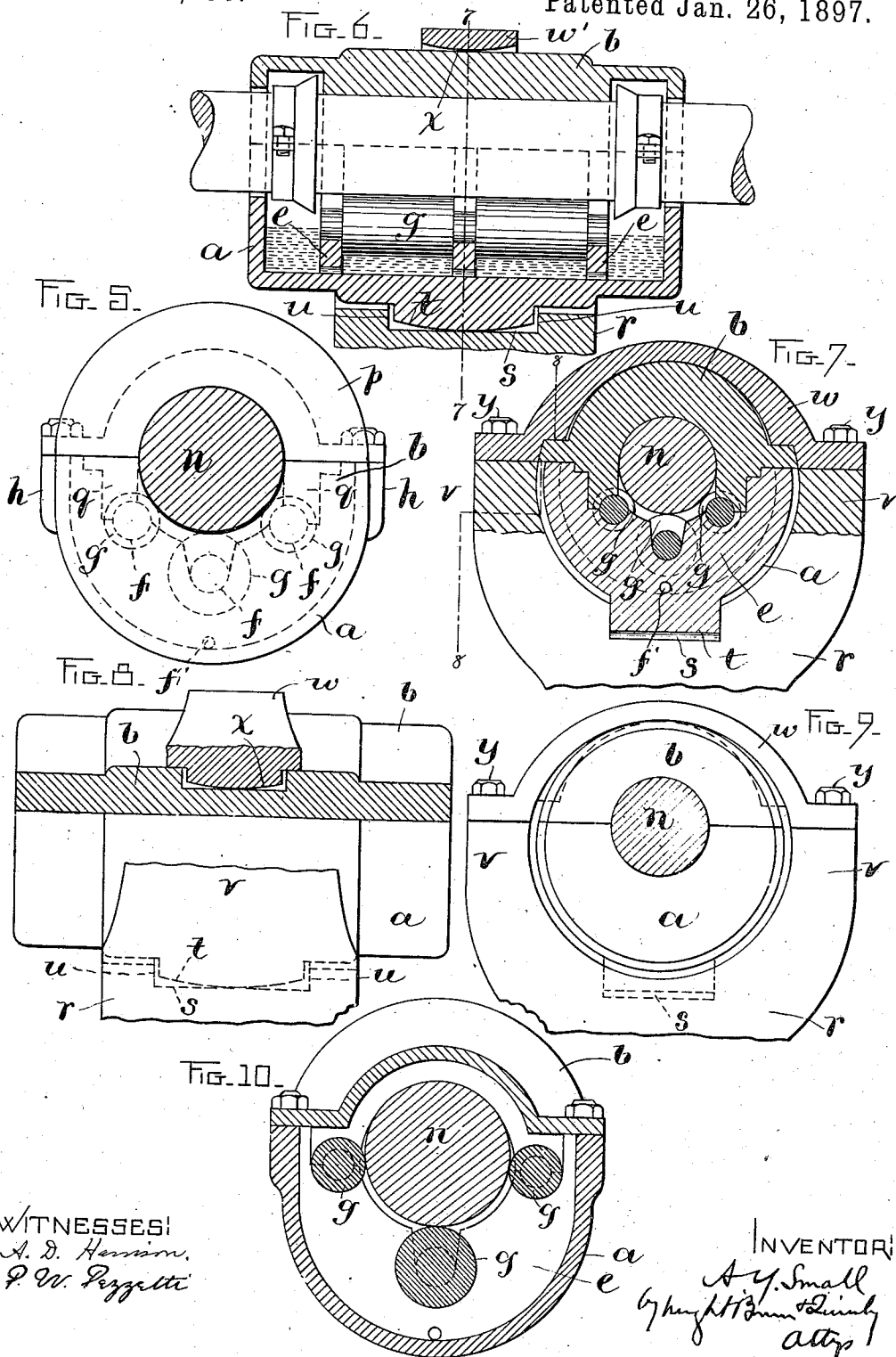
(No Model.)

2 Sheets—Sheet 2.

A. Y. SMALL.
ANTIFRICTION BEARING.

No. 575,858.

Patented Jan. 26, 1897.



WITNESSES:
A. D. Harrison,
P. W. Pizzetti

INVENTOR:
A. Y. Small
by *Wm. L. Smith*
attys

UNITED STATES PATENT OFFICE.

ANDREW Y. SMALL, OF BROCKTON, MASSACHUSETTS, ASSIGNOR OF FIFTY-
ONE ONE-HUNDREDTHS TO WILLIAM RAPP, OF SAME PLACE, EBEN B.
PAGE, OF BOSTON, AND ALBERT HERBERT, OF NEWTON, MASSACHU-
SETTS.

ANTIFRICTION-BEARING.

SPECIFICATION forming part of Letters Patent No. 575,858, dated January 26, 1897.

Application filed April 29, 1896. Serial No. 589,559. (No model.)

To all whom it may concern:

Be it known that I, ANDREW Y. SMALL, of Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Antifriction-Bearings, of which the following is a specification.

This invention relates to means for lubricating and otherwise reducing the friction of shafts in their bearings, and, as here shown, is designed with special reference to the support and lubrication of shafts from below or the under side, the bearing supporting the weight of the shaft and its adjuncts, although the bearing may rest on the shaft or journal, as in the case of car-axles, which latter support the bearing.

The object of this invention is the production of a simple and thoroughly practical antifriction-bearing in which one or more of the rotary parts comprising the shaft or journal and the antifriction-rollers possesses the further function of supplying oil to the contacting portions of the shaft and roller, so that in addition to the antifrictional support afforded by the roller-bearings there is a constant lubrication which still further reduces the friction and wear.

To this end the invention consists in the construction and combination of parts substantially as hereinafter described and claimed.

In the accompanying drawings, which form a part of this specification, Figure 1 represents a side elevation, and Fig. 2 a longitudinal section, of a shaft-hanger embodying the improvements, the yoke-bracket for supporting said hanger being omitted. Fig. 3 represents a section on line 3 3 of Fig. 1, said figure also showing the yoke-bracket in elevation. Fig. 4 represents a section on line 4 4 of Fig. 1. Fig. 5 represents an end elevation from either end of Fig. 1. Fig. 6 represents a longitudinal section showing a somewhat different construction particularly adapted to support the shaft of a dynamo or electric motor. Fig. 7 represents a section on line 7 7 of Fig. 6. Fig. 8 represents a section on line 8 8 of Fig. 7. Fig. 9 represents an end elevation of the form shown in Figs. 6, 7, and 8. Fig. 10 represents a section similar to Fig. 4,

showing a somewhat different arrangement of rolls.

The same letters of reference indicate the same parts in all the figures.

Referring first to Figs. 1 to 5, inclusive, *a* indicates the oil-reservoir, of substantially semicylindrical shape in cross-section, and *b* indicates the cap or cover therefor, the two being provided with suitable ears adapted to be secured together by screws or bolts *c*.

Within the oil-reservoir are bearings *f* for the antifriction-rollers *g*, said bearings being formed in a plurality of cross-bars *e*, (preferably three,) said cross-bars having orifices *f'* next the bottom of the oil-reservoir, in order that the oil may pass them freely. Each side of the reservoir, midway of its length, is provided with an ear or lug *h*. The said ears or lugs *h* are each provided with a cone-shaped recess *k* to form bearings for the pointed trunnions *l*, adjustably carried by the ends of the fork or yoke bracket *m*, by means of which the shaft-bearing is suspended.

The ends of the reservoir and cover are suitably recessed to admit the shaft *n*, which rests on the three antifriction-rollers and is closely fitted above by the cover *b*. Said shaft is provided with collars *o o* to prevent oil from working outwardly along the shaft, and the cover *b* is provided with hoods or raised portions *p* to receive the upper parts of said collars.

The cover *b* is also provided with lugs *q*, extending down within the sides of the reservoir, the lower ends of said lugs being concave to bear on and fit the trunnions of the two side rollers. In the drawings three such lugs are shown, the central one on each side bearing on a reduced portion of the roller.

The middle or lower one of the three antifriction rollers *g* is preferably larger than the others, and this roller (as well as the others, if the amount of oil in the reservoir is sufficient) takes up oil and applies it to the shaft, thus still further reducing the friction and wear.

Figs. 6, 7, 8, and 9 illustrate a construction adapted particularly to support the shaft of a dynamo. In this form, instead of the ears *h*, trunnions *l*, and yoke-bracket *m*, the bear-

ing is supported with some freedom of movement in a fixed standard *r*, which is in the form of a fork or yoke and is provided with a flat surface *s*, on which the shaft-bearing 5 may rock longitudinally.

The oil-reservoir is formed with a rocker *t* on its lower portion to rest on said base *s*, and the latter is depressed, so as to leave a shoulder *u* at each end, whereby the rocker 10 *t* is retained in position endwise.

The standard *r* has an arm *v* extending up on each side of the oil-reservoir, and the two arms *v* are connected by an arch or bridge *w*, the inner surface of which is curved, as 15 shown at *x* in Fig. 8, said curved surface being in contact with the top of the cover *b*, the bridge serving to hold the cover on the oil-reservoir, but permitting said reservoir and cover to oscillate slightly in a longitudinal 20 direction or to be adjusted in such direction on the base *s*. In this form the screws or bolts *c* are omitted, the bolts *y*, which secure the bridge *w* to the arms *v* of the standard, 25 to hold the cover in place.

This invention is not restricted to the precise details of construction shown, and certain modifications may be made within the scope of the claims. For instance, the cross- 30 bars or ribs *e*, having the bearings for the rollers, may be separate from the casing *a* instead of integral therewith.

In Fig. 10 I show a construction which is like that shown in Fig. 4, excepting that the 35 side rollers *g* are elevated to give a better support to the shaft against an approximately horizontal draft or strain.

It will be seen that the trunnions *l* and sockets *k* (shown in Fig. 3) and the rocker *t* 40 and flat base *s* (shown in Fig. 6) constitute complementary bearings which permit a longitudinal oscillation of the reservoir for the purpose of maintaining the rolls in exact parallelism with the shaft.

5 The collars *o o* are preferably made of sheet-metal sections clamped upon the shaft. Packings *o'*, of felt or other suitable material, may be interposed between the collars and shaft to prevent oil from creeping outwardly through 10 the crevices between the collars and shaft.

I do not limit myself to the relative arrangement of the oil-reservoir, rollers, and shaft here shown, whereby one or more of the rollers is caused to take up oil and supply it to

the shaft, as my invention may be applied to 55 a car-axle box, the rollers being located above the shaft or journal portion of the axle and out of contact with the accumulation of oil, in which case the lower portion of the axle 60 itself may project into the oil, the result being the same as that of the arrangements shown in the drawings.

I claim—

1. In a bearing of the character specified, the combination of an oil-reservoir having 65 bearings for a plurality of rollers, antifriction-rollers journaled in said bearings and arranged to support the shaft and to transfer oil thereto from the reservoir, a fixed support for said reservoir, and complementary bear- 70 ings on said reservoir and support whereby the reservoir is permitted to oscillate longitudinally to maintain its rolls in parallelism with the shaft.

2. The combination with the oil-reservoir 75 having the central ears, of the cross-bars or ribs, a plurality of antifriction-rollers mounted in said bars, and the yoke-bracket or hanger having trunnion engagement with said ears.

3. The combination with the oil-reservoir 80 having central ears, of the cross-bars or ribs forming bearings, antifriction-rollers mounted in said bearings, the cover having lugs extending down inside of the reservoir, said lugs to bear on the trunnions of the rollers, and 85 the bracket or hanger having trunnion connections with said ears.

4. The combination with the oil-reservoir, of a plurality of antifriction-rollers mounted therein, and the cap or cover secured to said 90 reservoir and having lugs extending down inside thereof and fitted to the trunnions or axles of the rollers.

5. The combination with the oil-reservoir *a* having ears *h*, of the cross-bars or ribs having 95 three sets of bearings *f*, the cover *b* bolted to the reservoir, the rollers *g* in the bearings *f*, and the yoke-bracket *m* having trunnions *l* fitted to said ears *h*, substantially as and for the purpose set forth. 100

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 22d day of April, A. D. 1896.

ANDREW Y. SMALL.

Witnesses:

C. F. BROWN,

A. D. HARRISON.