

No. 805,871.

PATENTED NOV. 28, 1905.

F. W. McCAIN.

PROPELLER.

APPLICATION FILED OCT. 8, 1904.

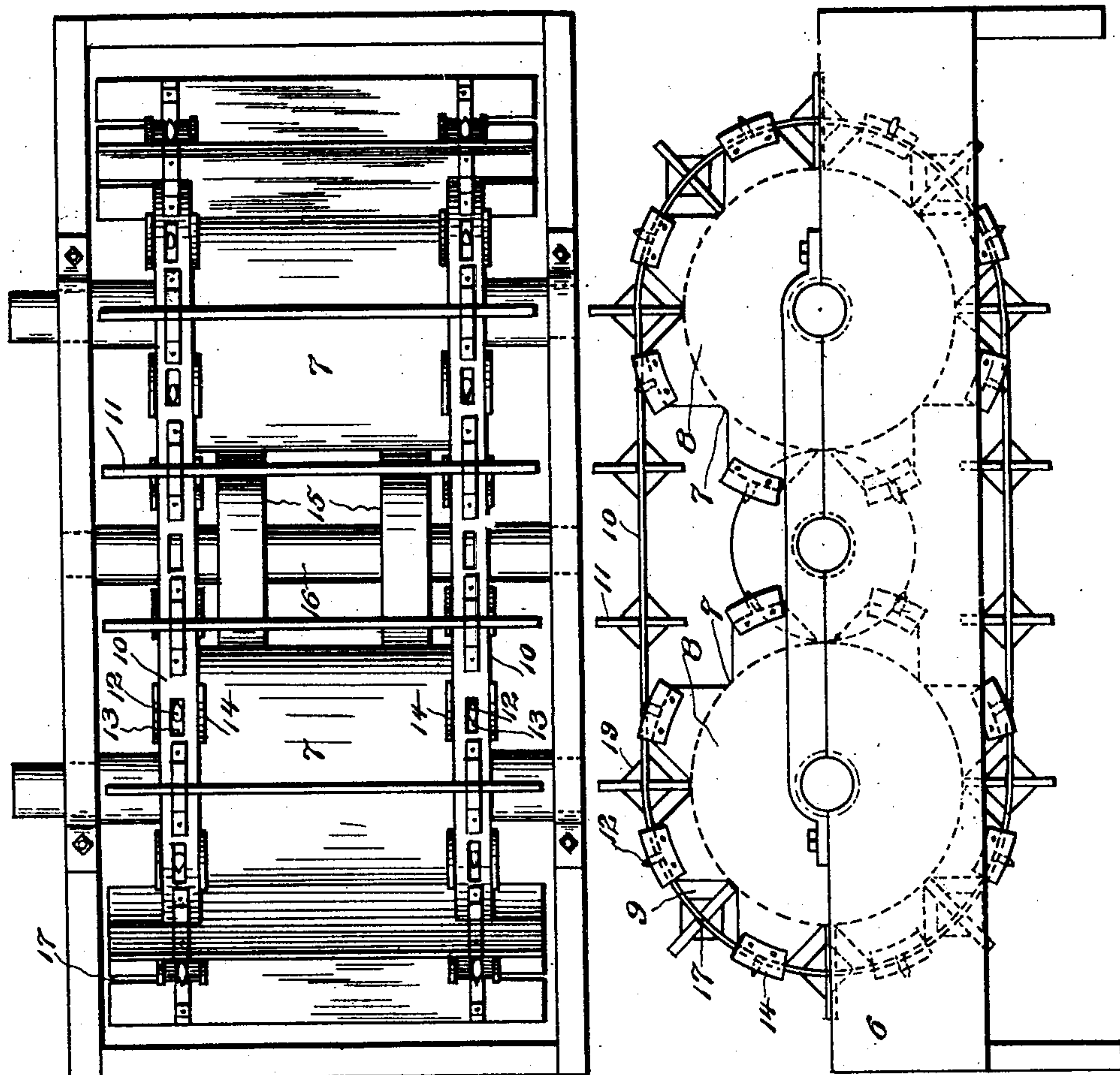


Fig. 1.

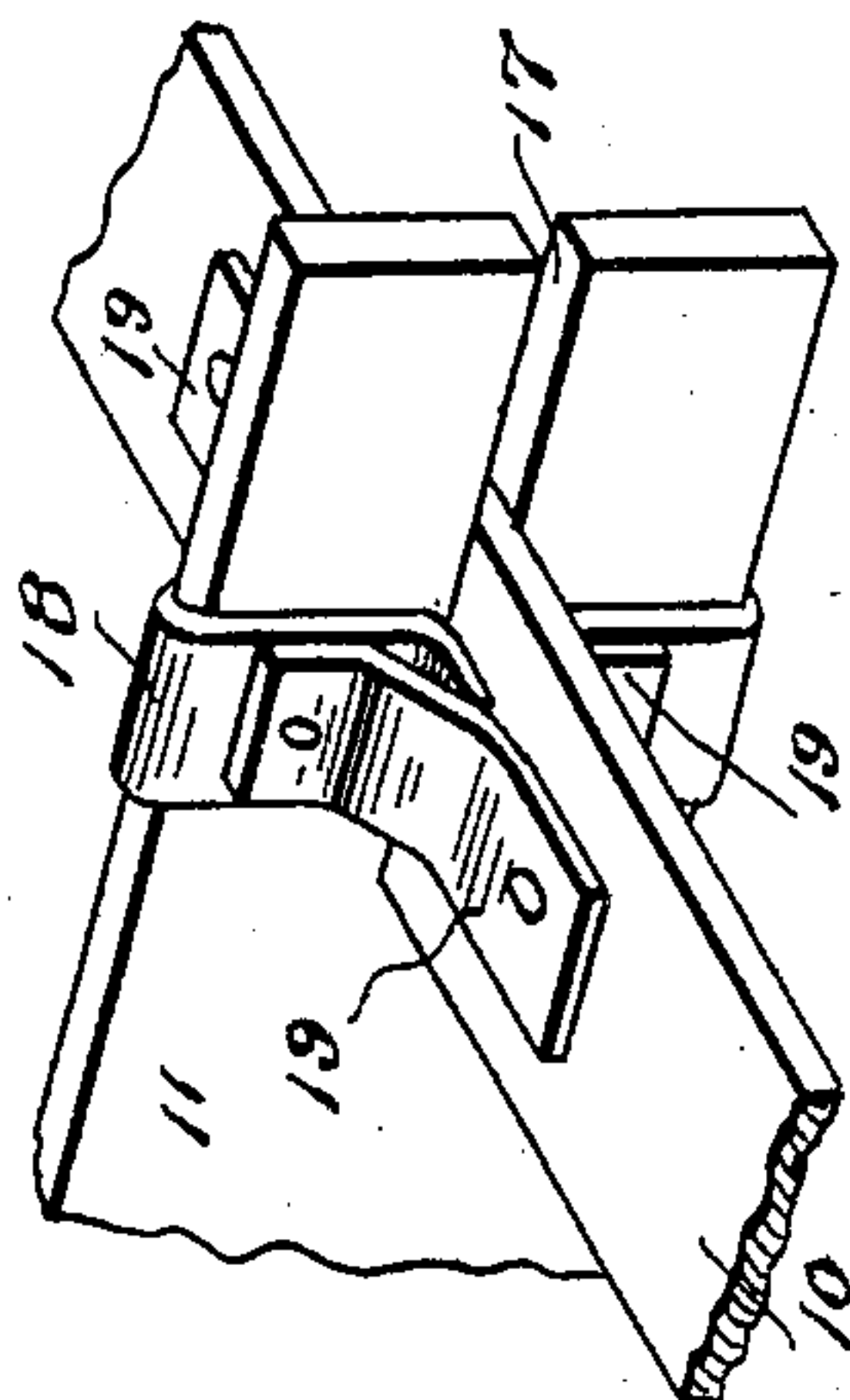


Fig. 3.

Fig. 2.

Witnesses

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FRANCIS W. McCAIN, OF MIDWAY, WEST VIRGINIA.

PROPELLER.

No. 805,871.

Specification of Letters Patent.

Patented Nov. 28, 1905.

Application filed October 8, 1904. Serial No. 227,681.

To all whom it may concern:

Be it known that I, FRANCIS W. McCAIN, a citizen of the United States, residing at Midway, in the county of Putnam and State of West Virginia, have invented new and useful Improvements in Propellers, of which the following is a specification.

This invention is a propeller for boats of that kind in which endless bands or ropes pass around two wheels or drums to which the power is applied, said bands or ropes carrying paddles.

The construction is capable of application to either the side or stern of boats, and it is characterized particularly by improvements with respect to the manner in which the wheels are constructed and in which the paddles are connected to the bands. Improvement is also claimed with respect to devices to prevent the bands from slipping off the wheels or from becoming displaced.

An embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view. Fig. 2 is a side elevation. Fig. 3 is an enlarged perspective view of one of the paddles, showing how it is attached to the bands.

Referring specifically to the drawings, 6 indicates the supporting-frame which carries the operating or moving parts. Journaled in suitable bearings upon this frame are the shafts of the rotating drums or wheels. Each consists of a drum 7, fixed between two wheels 8. The diameter of the drum is less than the wheels, so that the latter project beyond the drum at their outer edges. Each wheel has V-shaped notches in the rim, as at 9, which notches receive the paddles during the operation of the machine. The notches extend in depth to the periphery of the drum, so that as the paddles pass around the wheels their inner edges come in substantial contact with the drum. The notches are flared or V-shaped to afford room for the entry thereinto of the braces for the paddles, to be hereinafter described.

The endless bands, of which there are two, one at each side, are indicated at 10 and are preferably made of flexible metal, particularly in use on ships or boats of small size. For vessels of larger size, requiring greater strength, a wire rope or a series of such ropes may be used. These bands carry the paddles 11. The bands fit or travel around the rims of the wheels, and to prevent slipping the

wheels have between the notches pins 12, which enter into holes 13, formed in the bands. The wheels also have plates 14 on each side thereof, which plates project slightly beyond the rim between the notches and serve to guide the bands and prevent the same from slipping off the wheels sidewise.

Located between the wheels above described are a pair of idle rollers 15, carried on a shaft 16, which finds its bearings in the frame. Said rollers bear between the drums 7 and serve to keep the belts tight and to prevent excessive friction and wear in the bearing-boxes of the wheel-shafts.

The means for attaching the paddles to the bands are particularly illustrated in Fig. 3. Each paddle is slotted at the ends, as at 17, and the bands are slipped in the slots at a snug fit. A strap 18 is placed around the end of the paddle and bolted or otherwise secured to the band. Braces 19 are then placed between the straps and the bands on both sides of the paddle and on both sides of the band, and these braces are firmly bolted or otherwise secured in place. The paddles are thus held rigidly, and inasmuch as the bands pass through the slots at or about the middle of the paddles there is no twisting strain on the bands, but the pressure is substantially equal on both sides, giving a direct pull with little liability of buckling or breaking the band, and, furthermore, the paddles are thus held at an exact perpendicular to the line of thrust, thus giving a most effective forward motion as they pass through the water. The width or size of the notches 9 is sufficient to allow the end braces 19 to enter therein as the bands pass around the wheels, so that the bands are not prevented from coming in contact with the rim of the wheels.

By the construction shown an effective propeller is produced having least possible strain on the bands or belts used, hence allowing the use of lighter material than if the strain on the paddles were not so evenly distributed and supported. The use of endless metal bands or wire rope avoids the wear incident to the use of linked belts, chains, and the like.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a propeller for vessels, the combination with flexible metal bands and means to drive the same, of paddles having at the ends slots at the median line through which the bands extend, straps extending around the

ends of the paddles and fastened to the bands, and braces between the straps and bands.

2. In a propeller for vessels, the combination with pairs of wheels having a series of
5 notches in the rims, and drums between the wheels, of endless bands which pass around said wheels, and paddles which are carried by the bands at the same distance apart as the notches, which paddles extend inwardly from

the bands; and enter the notches to contact with the drums.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANCIS W. McCAIN.

Witnesses:

MINA HIGGINBOTHAM,

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