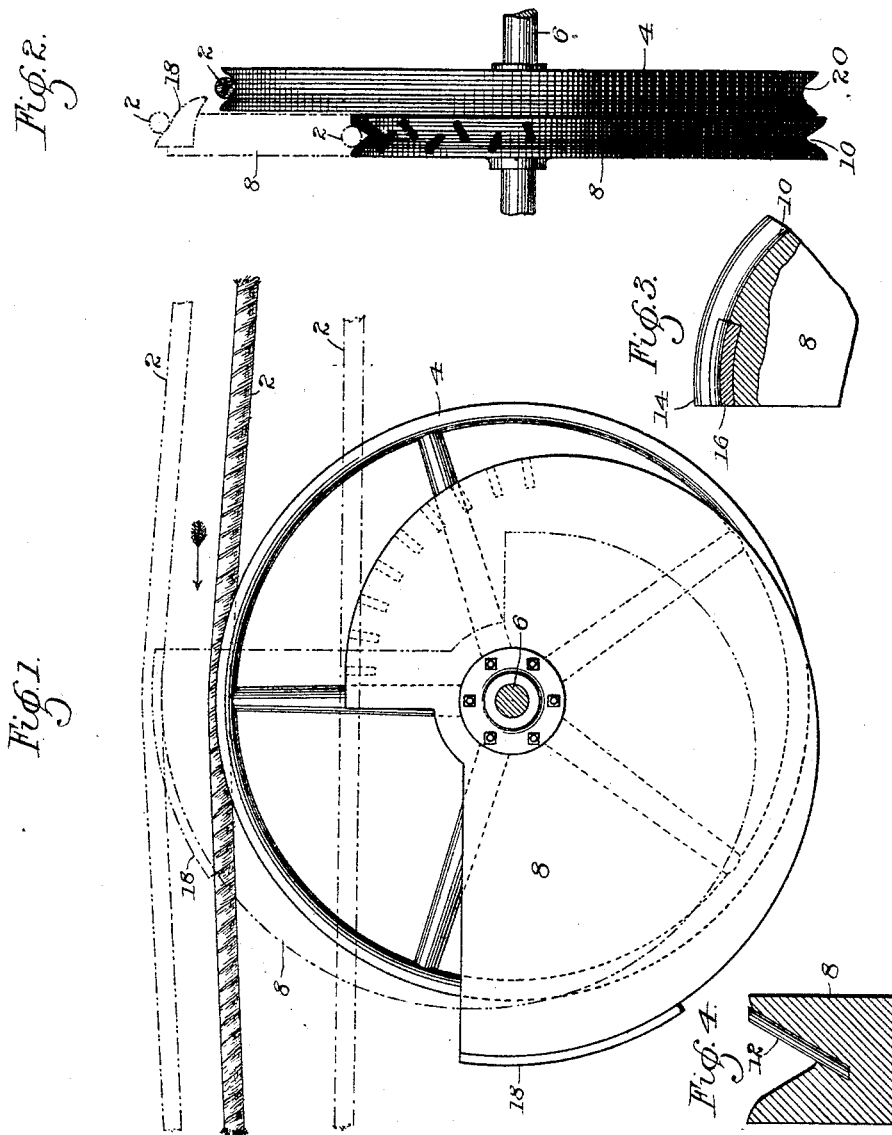


(No Model.)

E. P. MORGAN & R. McCARTHY.
THROW-ON SHEAVE FOR CABLE RAILWAYS.

No. 458,913.

Patented Sept. 1, 1891.



Witnesses:-

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UNITED STATES PATENT OFFICE.

EVOR P. MORGAN AND RICHARD MCCARTHY, OF ST. PAUL, MINNESOTA.

THROW-ON SHEAVE FOR CABLE RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 458,913, dated September 1, 1891.

Application filed May 21, 1891. Serial No. 393,566. (No model.)

To all whom it may concern:

Be it known that we, EVOR P. MORGAN and RICHARD MCCARTHY, both of St. Paul, Ramsey county, Minnesota, have invented certain
5 Improvements in Throw-On Sheaves for Railway-Cables, of which the following is a specification.

Our invention relates to improvements in devices for automatically replacing the cables
10 of cable railways when accidentally thrown off from the elevating-sheaves over which the cables are carried in the conduit at crossings, terminals, curves, and other places.

To this end our invention consists in arranging loosely upon the elevating-sheave shaft and close to the sheave a grooved eccentric or cam sheave with its shortest radius
15 less and its longest radius greater than the radius of the elevating-sheave, into the groove of which the cable is necessarily thrown when displaced from the elevating-sheave. The
20 cam-sheave is so balanced that the point on its periphery nearest its pivot stands normally at the top, and a cable striking upon it and
25 binding in the groove causes it to rotate and bring the highest point on its periphery uppermost, where a bevel plate terminating the groove causes the cable to slide from the cam
back onto the elevating-sheave.

30 Our invention further consists in the construction and combination hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part
35 of this specification, Figure 1 is a side elevation of the cam and elevating sheaves, showing the two positions of the cam-sheave and the three positions of the cable. Fig. 2 is a
40 rear elevation of the same. Fig. 3 is a sectional detail showing the removable section in the periphery of the cam-sheave; and Fig. 4 is a detail showing one of the dowel-pins, which are arranged alternately in the sides
of the grooves of the cam-sheave.

45 In the drawings, 2 represents a section of the cable, which normally runs in the direction of the arrow over the sheave 4, arranged at any point where it is necessary for the grip to throw it off or take it up, as at crossings
50 and curves, which lifts the cable above its normal height.

6 is the shaft of the sheave 4, having suitable journal-supports in the cable-conduit.

Mounted loosely upon the shaft 6 and close
to the sheave 4 is the wooden eccentric or cam
55 sheave 8, provided with a wedge-shaped peripheral groove 10. This groove is protected for a short distance from the point of shortest
radius by means of iron or steel dowels 12, standing inward slightly beyond the walls
60 of the groove, as shown best in Fig. 4, which receive the blows and wear of the cable, thus partially protecting the walls of the groove. The wear upon the cam in use being greatest
at the point 14—that of the shortest radius—
65 where the cable strikes it, we prefer to arrange in the periphery of the cam at that point a removable block 16, which can be taken out and replaced by a new one when worn.

In operation, while the cable normally runs
70 over the sheave 4, sometimes, however, usually from the carelessness of the gripman in failing to disengage the grip when approaching the sheave, the cable is thrown off from
75 the sheave and drops downward into the position shown by the dot-and-dash lines of Fig. 1. There it strikes upon the cam 8 at the point 14, and, wedging into its groove 10, turns
it around upon the shaft 6 until it is in the
80 highest position shown by the two dot-and-dash lines of Fig. 1, the cable then being in the position shown by the two dot-and-dash lines of said figure. When the cam has
reached that position, the cable is elevated
85 above the top of the sheave 4 and, riding upon the bevel-plate 18, which terminates the groove 10, slides off from the plate and drops
back into its normal position in the groove
20 of the sheave 4. The cam then being freed
90 from the cable turns into its normal position, as shown by the full lines in Fig. 1, it being so counterbalanced as to assume that position.

We claim—

95 1. In a cable railway, the combination, with the elevating-sheave, of a cam-sheave, its shortest radius being less and its longest radius greater than the radius of the elevating-sheave mounted loosely on its shaft close to
100 said sheave and standing normally with its shortest radius vertical above the shaft, a

- wedge-shaped peripheral groove in said cam, and a beveled plate terminating said groove at the point of greatest radius and inclined inward toward the elevating-sheave, substantially as and for the purposes set forth.
2. In a device of the class described, the combination, with the elevating-sheave, of a cam-sheave arranged close to said elevating-sheave and mounted loosely on its shaft, adapted to be engaged by the cable when thrown from the elevating-sheave and to be turned by it to lift the cable above the elevating-sheave and return it thereto, substantially as and for the purposes set forth.
3. In a device of the class described, the combination of the elevating-sheave, a throw-on eccentric sheave, means for holding on top the point on the periphery of said eccentric of shortest radius, and means for throwing the cable out of its groove when it reaches the point of greatest radius, substantially as and for the purposes set forth.
4. In a device of the class described, the combination, with the elevating-sheave, of an eccentric throw-on sheave provided with a wedge-shaped groove, a removable section in its periphery at the point of shortest radius, and a beveled plate interposed in said groove at the point of longest radius, substantially as and for the purposes set forth.
5. In a device of the class described, a throw-on eccentric sheave standing normally with its shortest radius extending substantially vertically from its center, and a beveled plate in its groove at the point of longest radius, substantially as and for the purposes set forth.
6. In a device of the class described, a throw-on eccentric sheave having a wedge-shaped peripheral groove, a removable section in its periphery at the point of shortest radius, a bevel-plate on its periphery at the point of longest radius, and dowel-pins set in the sides of the groove standing slightly inward from the face of the groove, substantially as and for the purposes set forth.
7. In a cable railway, the combination, with an elevating-sheave, of means for returning the cable to said sheave when displaced therefrom, consisting of an eccentric sheave mounted loosely on the shaft of the elevating-sheave, adapted to receive the cable when thrown from the elevating-sheave and to be turned by it to lift the cable above the elevating-sheave, and having means for automatically throwing the cable when so raised from it back upon the elevating-sheave, substantially as and for the purposes set forth.
8. In a cable railway, the combination, with the cable-elevating sheave, of an idler-cam sheave adjacent thereto, adapted to receive the cable when displaced from the elevating-sheave and to be turned by its traction to raise the cable above the elevating-sheave, and means for throwing the cable from the cam-sheave onto the elevating-sheave, substantially as described.

In testimony whereof we have hereunto set our hands this 21st day of April, 1891.

EVOR P. MORGAN.

RICHARD MCCARTHY.

In presence of—

T. D. MERWIN,

A. MAE WELCH.