

(No Model.)

A. MOORE.  
PIER PROTECTOR.

No. 446,586.

Patented Feb. 17, 1891.

Fig 1

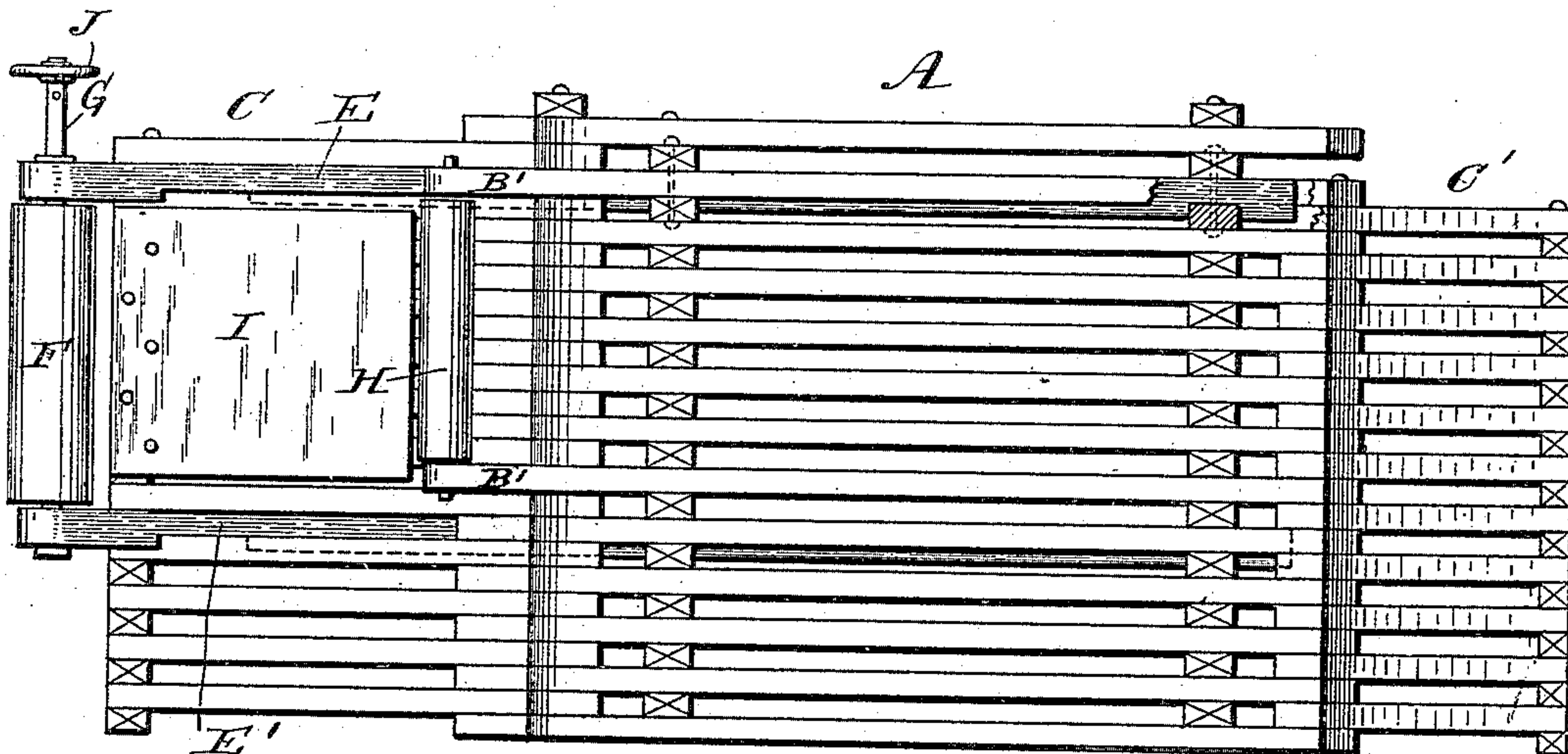
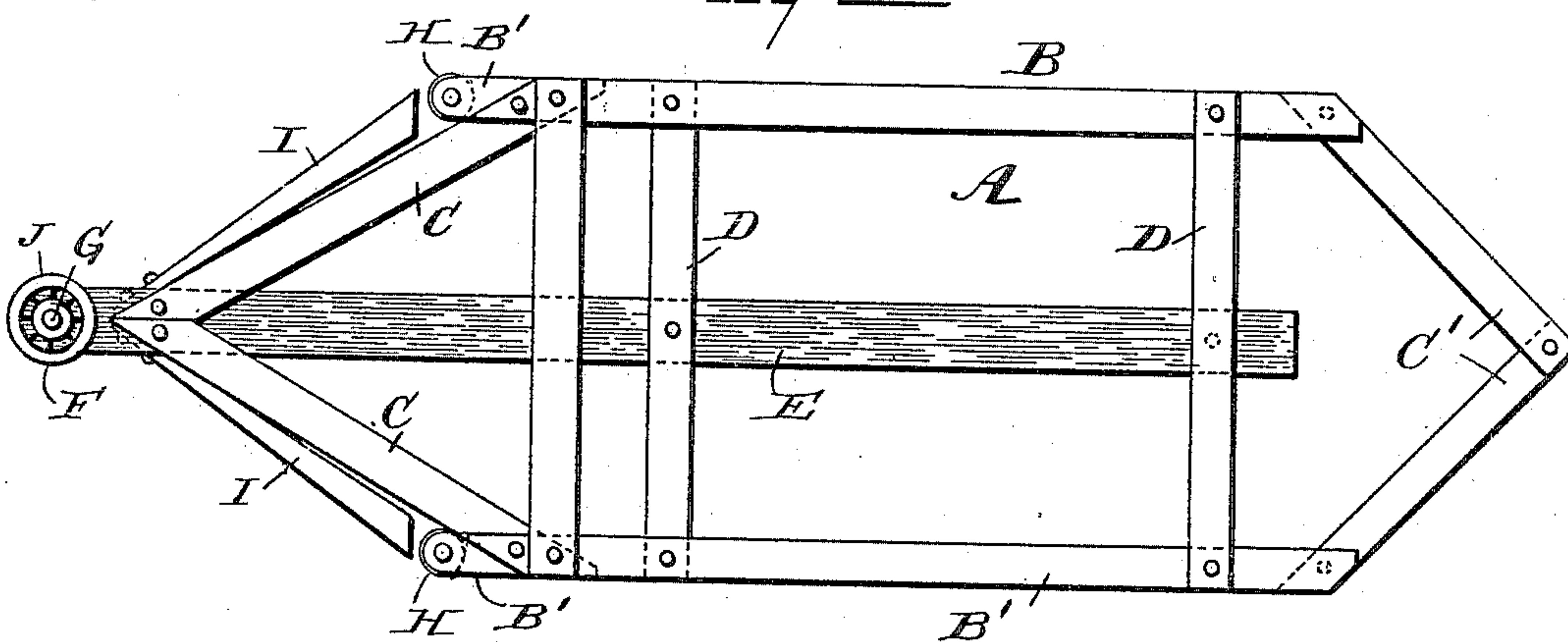


Fig 2



WITNESSES:

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# UNITED STATES PATENT OFFICE.

AGNEW MOORE, OF MISSOULA, MONTANA.

## PIER-PROTECTOR.

SPECIFICATION forming part of Letters Patent No. 446,586, dated February 17, 1891.

Application filed May 16, 1890. Serial No. 352,061. (No model.)

*To all whom it may concern:*

Be it known that I, AGNEW MOORE, of Missoula, in the county of Missoula and State of Montana, have invented a new and Improved Pier-Protector, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved bridge-pier protector which is simple and durable in construction, and especially designed to protect bridge-piers so as to prevent heavy articles—such as drift-wood, saw-logs, boats, &c.—drifting down the river from injuring the pier.

The invention consists of certain parts and details and combinations of the same, as will be described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in both the figures.

Figure 1 is a side elevation of the improvement as applied, and Fig. 2 is a plan view of the same.

The improved pier-protector is specially designed for use on wooden or stone piers such as are usually employed in rivers, streams, &c., and of the construction shown in Figs. 1 and 2. The pier A, built of beams with intervening spaces, is provided with the parallel sides B B', and the V-shaped ends C and C', of which the former extends up the stream and has its apex exposed to articles floating down the river.

The sides B and B' are connected with each other in the usual manner by cross-beams D, which, in connection with the end C, support two longitudinal beams E and E'. In order to prevent injury to the apex of the end C, a roller F is provided, which is arranged vertically and secured on a shaft G, mounted to turn in suitable bearings formed in the longitudinally-extending beams E and E', built into the pier A, one above the other, in such a manner that the lower one E' is a suitable distance below the water-level and the upper one a suitable distance above the water-level, so that the roller F extending between the two beams

E and E' protects the apex of the end C, as any article floating against the roller turns the latter and the article is shifted to one side, so that the pier is not touched or injured.

Two of the beams of each side B and B' are extended a short distance at their upper ends so as to form bearings for the vertically-arranged roller H, between which and the apex of the end C is placed a heavy plate I, the said roller and plate being about the same height as the front roller F. Now it will be seen that after an article has passed the roller F it may strike against the plate I, to pass over the roller H, so that the article is guided away from the pier and passes down the stream without further touching the latter. In rivers with tide-water a roller F is journaled at each end C and C', and plates I and rollers H are also placed on the lower end of the pier.

A hand-wheel J is placed on the upper end of shaft G, so as to turn the latter by hand in case the roller F is held tight by floating material.

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

1. A pier-protector comprising a vertical roller journaled at the apex of the pier, and rollers journaled at the sides of the pier, substantially as shown and described.

2. A pier-protector comprising a vertical roller journaled at the apex of the pier, side rollers journaled at the sides of the pier, and a plate arranged angularly between the front and side rollers at each side of the pier, substantially as shown and described.

3. A pier-protector comprising two longitudinal beams adapted to be secured in the pier and projecting beyond the apex of the latter, and a roller arranged vertically and journaled in projecting ends of the said beams in front of the apex of the pier, substantially as shown and described.

AGNEW MOORE.

Witnesses:

FRANK THOMAS,  
THOMAS MOORE.