

(No Model.)

F. MANUAL.
SPARK ARRESTER.

No. 332,724.

Patented Dec. 22, 1885.

Fig. 1.

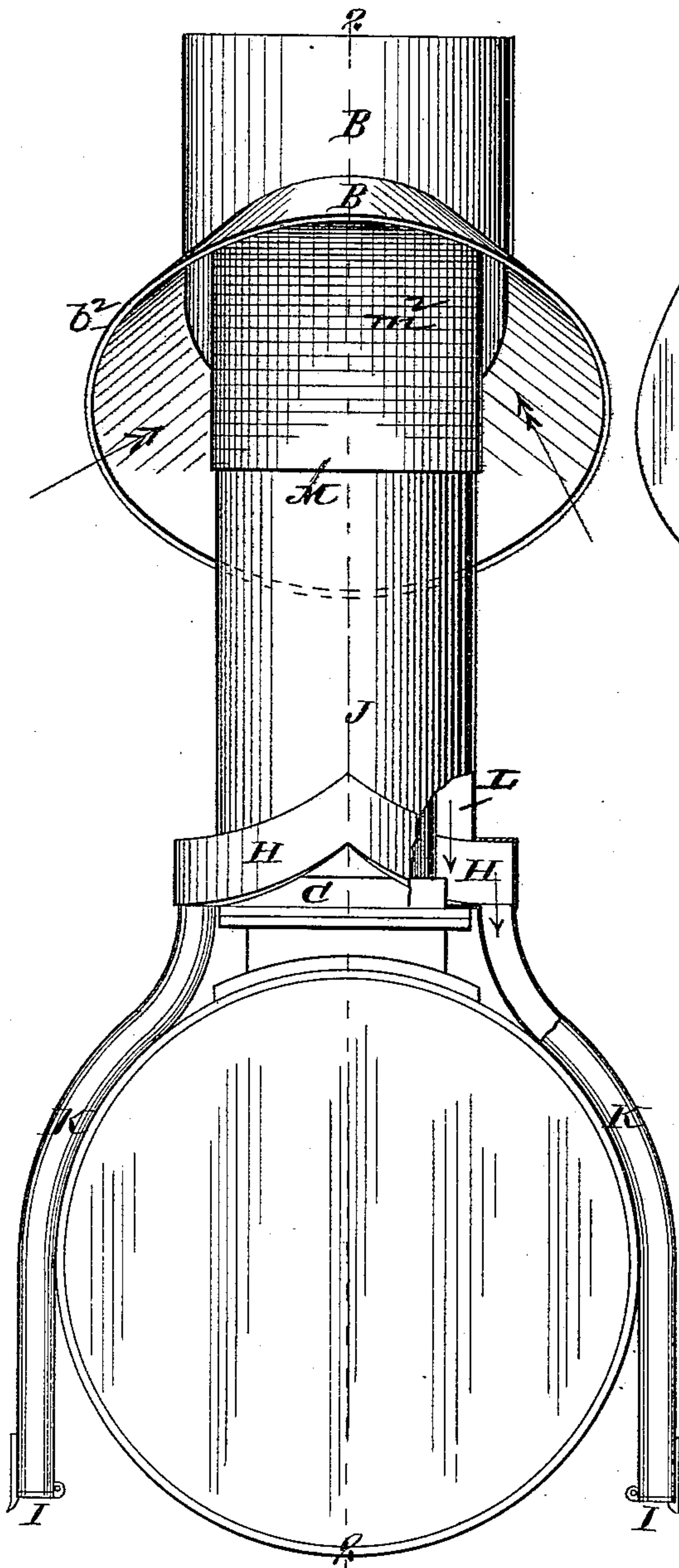
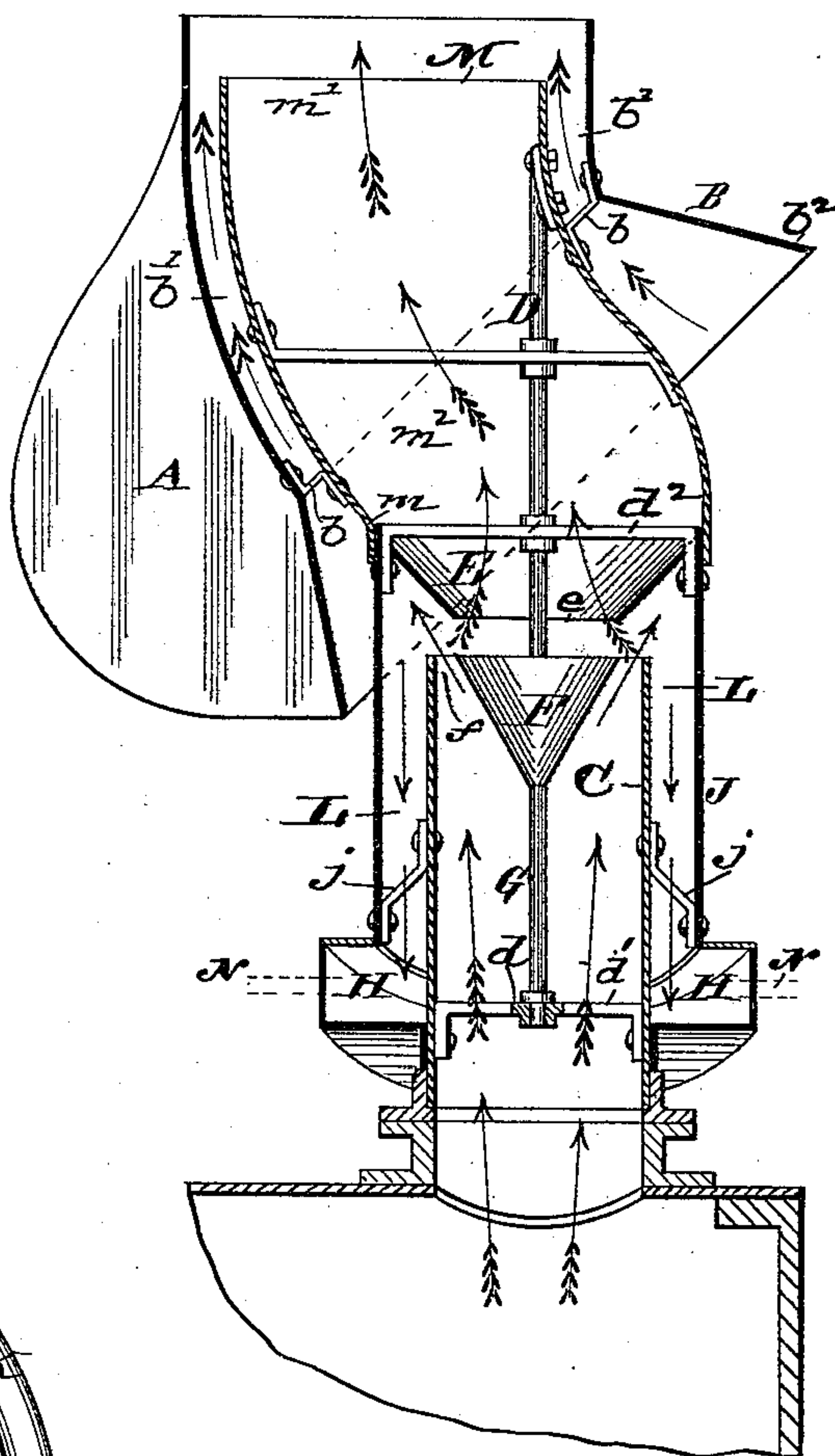


Fig. 2.



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FRANK MANUAL, OF ST. LOUIS, MISSOURI.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 332,724, dated December 22, 1885.

Application filed September 21, 1885. Serial No. 177,758. (No model.)

To all whom it may concern:

Be it known that I, FRANK MANUAL, of St. Louis, Missouri, have made a new and useful Improvement in Cowls and Spark-Arresters, of which the following is a full, clear, and exact description.

The improvement is more especially adapted to locomotives, but it can be applied to many forms of stationary chimneys.

It consists partly in the means by which the smoke is educted in an upward direction from the chimney or stack, and partly in the combination of parts whereby the smoke is discharged in an upward direction and the sparks in a downward direction.

The annexed drawings exhibit the improvement as applied to a locomotive stack.

Figure 1 is a front elevation, and Fig. 2 is a vertical section on the line 2 2 of Fig. 1.

The same letters of reference denote the same parts.

C represents the chimney or stack. Surrounding it, so as to form an annular space, L, outside of the stack, is a pipe, J, which is fixed in its position, say, by means of the stays *jj*, which project from the stack.

M represents a section of pipe fitted at its lower end, *m*, loosely to the upper end of the pipe J, and extending thence upward, curving or bending to one side of the center of the stack, and ultimately pointing upward, and at its upper end, *m'*, being open to discharge the smoke in an upward direction.

B represents a hood, attached, say, by means of the stays *b*, to the pipe M. Its shape conforms to that of the pipe M, but in size it is larger, to form the annular space *b'* around the pipe M, which space at its lower end is enlarged by means of the flaring flange *b²*, with which the hood is provided, and which encircles the pipe M at the bend *M²* of the last-named part. This causes the flange *b²* to assume an inclined position, substantially as is represented in the drawings.

The hood is also furnished with the vane A, which extends from the lower side of the flange upward, substantially as shown. The pipe M, carrying the hood, is adapted, by means of the spindle D, to rotate upon the pipe J. The spindle is suitably fastened to the pipe M, and it is stepped at *d* in some fixed part—such as the bar *d'*—of the construction. The spindle is suitably braced by the cross-bars *d' d²*. It is also utilized to support

the inverted cone F at the upper end of the stack C.

Above the cone F is a deflector, E, in the form of a flange, which from the pipe J inclines inward and downward, leaving a central opening, *e*, for the passage of the smoke. The annular space L at its upper end connects with the opening *e* and the annular space *f*, around the cone F, and at its lower end the space L connects with an annular passage, H, which surrounds the stack C. From the passage H pipes K K lead downward toward the ground, and at their lower end the pipes K K may be closed, when desired, by means of a valve, I. Water may be supplied to the space H by means of tubes, (indicated by means of the dotted lines N.)

In operation the sparks are deflected by means of the cone F and deflector E into the space L, whence they drop into the passage H, and thence they are discharged through the tube K. The escape may be prevented, when desired, by closing the valves I, which can be done by any suitable means. (Not shown.) The water delivered through the tubes N serves to quench the sparks and facilitate their discharge. The smoke passes upward through the opening *e* into the pipe M, and thence is delivered upward, which is an advantage, in that thereby it is carried higher than if discharged in a horizontal direction, and thus the annoyance to the occupants of a following train, or in the building beneath, is diminished. The hood, by means of the vane, keeps the flange *b²* to the windward, and the current passing upward through the space *b'* materially aids in promoting the upward discharge of the smoke. The pipe M swings with the hood upon the spindle-bearing; but for the space L the pipe M and the stack might connect.

I claim—

1. The combination of the stack C, the pipes J M K, the passage H, the spindle D, cone F, the deflector E, and the hood B, having the vane A, substantially as described.

2. A stack, C, having the pipe M bent and pointing upward, as described, and provided with the hood B, having the vane A, and attached to the pipe M, substantially as described.

Witnesses:
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