No. 703,338. Patented June 24, 1902.

F. J. ERNEWEIN.

SILO.

(Application filed Feb. 9, 1900.)

(No Model.)

FIG. 1.

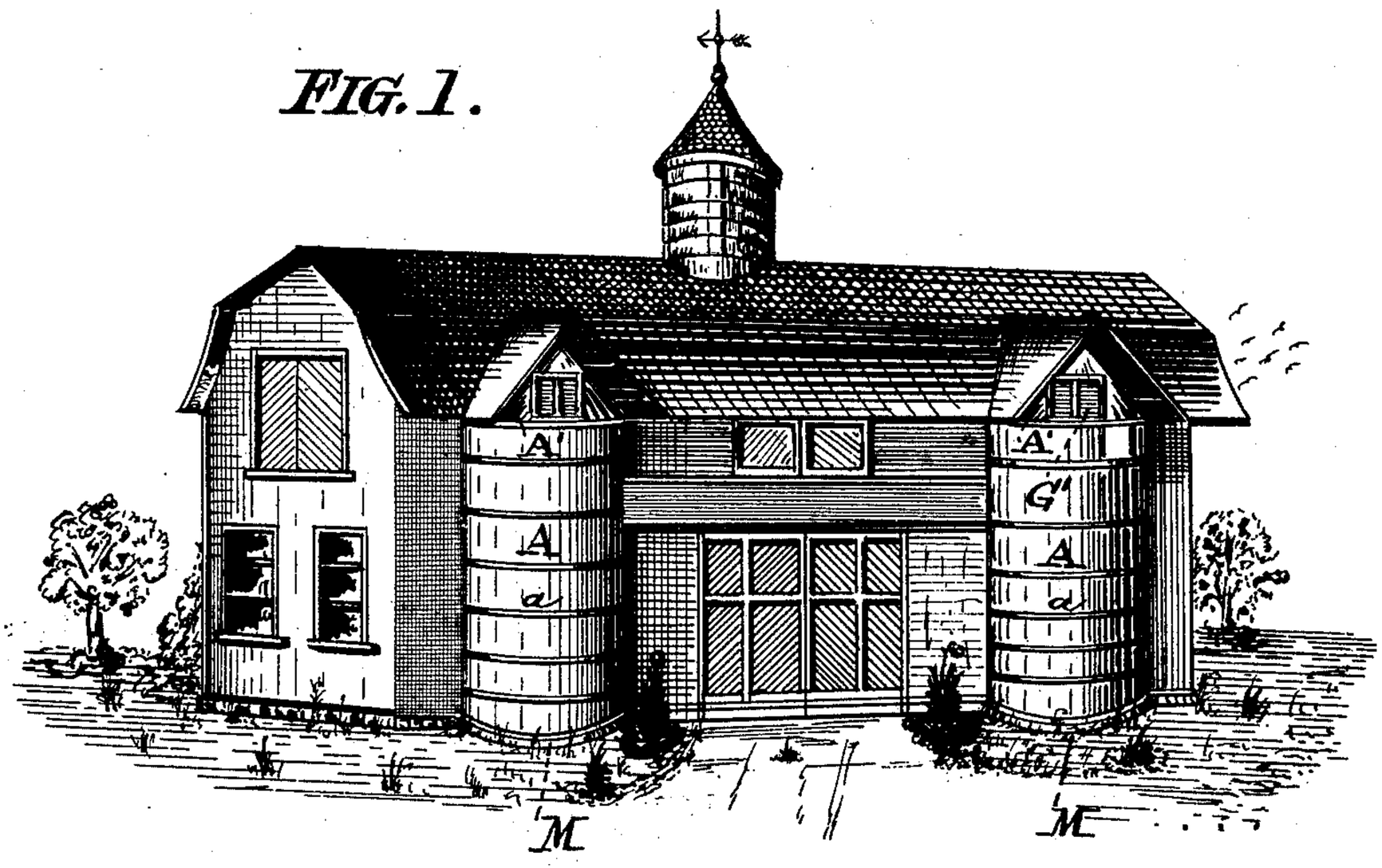

FIG. 2.

FIG. 3.

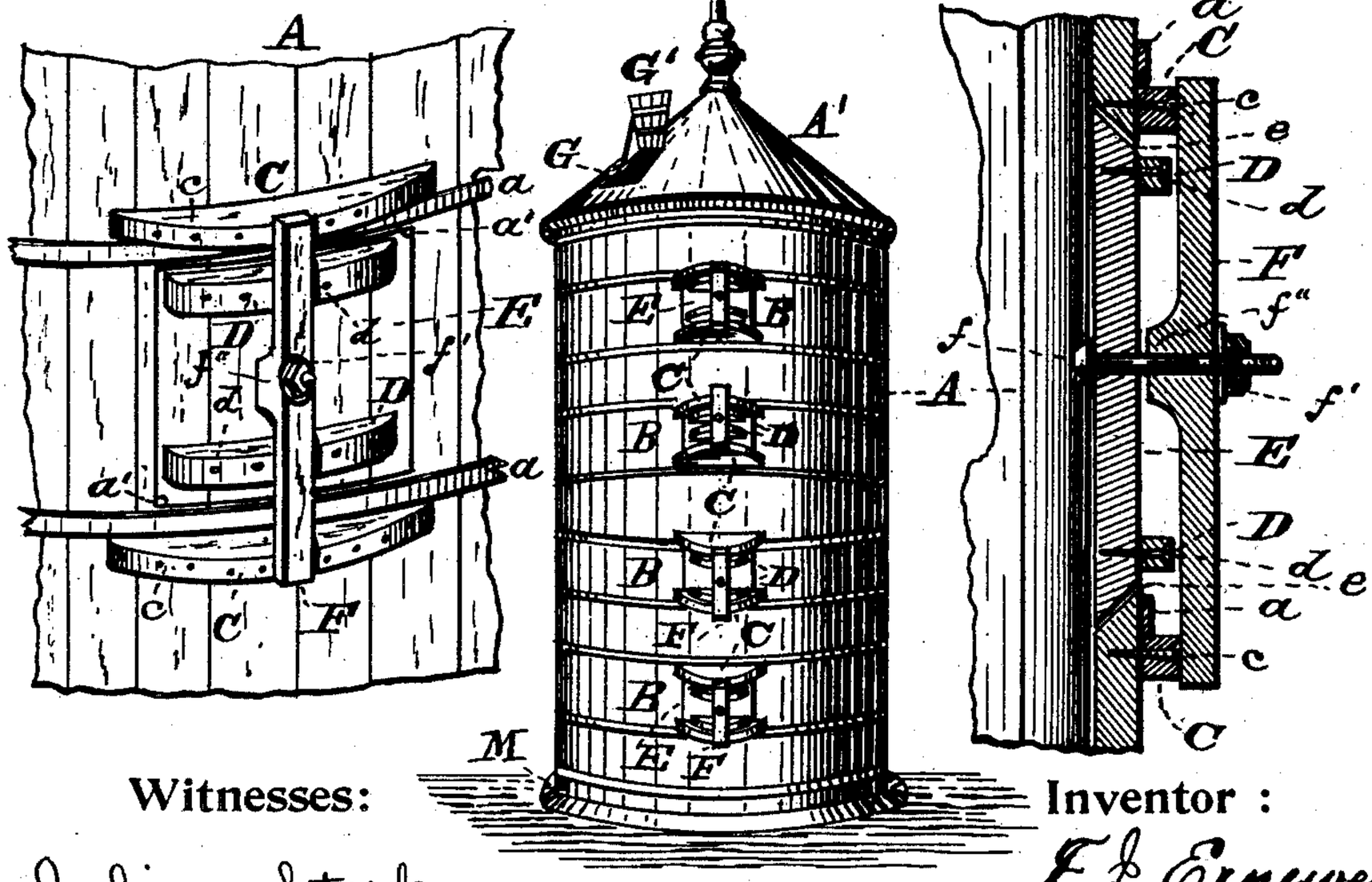

FIG. 4.

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UNITED STATES PATENT OFFICE.

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SILO.

SPECIFICATION forming part of Letters Patent No. 703,338, dated June 24, 1902.

Application filed February 9, 1900. Serial No. 4,665. (No model.)

To all whom it may concern:

Be it known that I, FRANK J. ERNEWEIN, a citizen of the United States, and a resident of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Silos; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheets of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has general reference to improvements in silos; and it consists, essentially, in the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth and described and then pointed out in the claims.

In the drawings already referred to, which serve to illustrate my said invention more fully, Figure 1 is a perspective view of a building or structure provided with a series of my improved silos. Fig. 2 is an end elevation in perspective of the silo detached. Fig. 3 is a perspective view of a portion of the silo, showing details of construction of the manhole and its appurtenances; and Fig. 4 is a longitudinal sectional elevation of the same.

Like parts are designated by corresponding letters of reference in all the figures.

A in the drawings designates the silo-tank. It is a substantially cylindrical structure composed of staves properly bound by hoops or bands *a* and provided with a preferably conical roof A'. In this tank there are a series of manholes B, one above the other, which said manholes and their appurtenances are constructed of wood in the following manner: The staves having been properly jointed and the tank temporarily erected and having determined the proper location of the manholes and having marked this location upon the exterior surface of the tank, two small holes *a'* are bored into the wood at diagonally opposite corners of the rectangular or oblong openings to be produced, and then by means of a keyhole-saw the staves are cut in two directions, taking care that the saw-kerf is at about an angle of forty-five degrees to the plane of the tank, as shown in Fig. 4. Prior to commencing to saw the door-opening I secure to the staves and above and below the horizontal lines of the opening to be produced curved cleats C by means of screws, nails, &c., *c*, and within the space to be occupied by the opening and parallel with the cleats C, I secure further, but shorter, cleats D by means of nails, screws, &c., *d*, so that after the horizontal and vertical lines have been followed by the keyhole-saw and the oblong opening sawed into the staves the portion thereof cut out of the tank will form the door E, Figs. 2, 3, and 4, of the manhole, packing-strips *e* being secured to the edges of the door, if necessary, to produce a tight joint. In the doors E there are provided stud-bolts *f*, over which is placed a locking-bar F, so that when the door E is placed within the door-opening and the bar F turned from a horizontal to a vertical position its ends sliding upon the curved cleats C will cause the door to be tightly drawn into its opening, sufficient tension being obtained by the bar F sliding up on the inclined planes or curved cleats C in an obvious manner.

The curved cleats heretofore mentioned are flat pieces of wood, having an inner curve corresponding with the external curvature of the tank and an outer curve of considerable less diameter, so that the outer edge of said cleats forms, as it were, double-inclined planes, upon which the locking-bar F slides, whereby no matter in which direction this locking-bar F may be revolved to turn it from a horizontal to a vertical position it can slide upon these cleats F and draw the door E tightly into its opening. These cleats C perform, in addition to being double-inclined planes, the function of reinforcing members to strengthen the tank above and below the door-openings therein, thus serving a twofold purpose and forming an essential feature in the construction of silo-tanks. The cross-bar or locking-bar F has centrally an inwardly-projecting protuberance *f''*, Figs. 3 and 4, which prevents this locking-bar F from moving laterally upon the bolt *f* more than but a slight distance, the elasticity of the material of said bar being mainly depended upon to draw and hold the door in position within its opening.

In the roof of the silo-tank there is an opening G of ample size, which opening is closed

by a door G', hinged to the roof. This opening G is designed to admit of the filling of the silo-tank by means of elevating devices. (Not shown.)

In structures of the kind described I prefer to locate the silo-tank so that it forms an integral part or portion of the building, part of the tank being within the same and the remainder outside thereof, as shown in Fig. 1. I also locate the manholes so as to be within the building, while the opening G in the roof is without the same. In this manner the fodder to be preserved in the silo is brought to the same without entering the building, while the preserved fodder as fast as it is required for use in feeding cattle or live stock kept in the building is removed from the silos through the manholes within the building, it being understood that the silo-tank is provided with a number of these manholes, one above the other, in order to avoid the fodder being lifted to any extent to remove it from the silo. It will thus be seen that the entire arrangement of this structure is such as to provide for the greatest comfort of and the least amount of labor for the attendants to the live stock in the care of and feeding the same.

It will be observed that in the construction of the silo-tank and the manhole-trimmings nothing but wood enters into their construction. There is therefore nothing that is liable to rust or affect the quality of the fodder which is being preserved in the silo. It will be further observed that in cases where a large number of cattle are being kept I provide for more than one silo in the building, and in Fig. 1 I have shown a stable which is provided with two of the silo-tanks; but any number of these tanks may be used to suit the various requirements.

Having thus fully described my invention, I claim as new and desire to secure to me by Letters Patent of the United States—

1. An improved silo-tank consisting of a wooden tank having a series of manholes located one above the other, covers for the manholes, the meeting edges of the covers and manholes being oppositely beveled, cleats secured to the tank adjacent the manholes and serving to aid in holding the staves of the tank, said cleats being formed with double inclines, and a locking-bar pivoted to each of the covers and adapted to engage the inclines of the cleats to secure the covers in place.

2. A silo-tank comprising a wooden receptacle formed of staves, having a series of manholes, covers therefor, the meeting edges of the covers and manholes being oppositely beveled, double-inclined cleats secured to the tank above and below each manhole, and serving to aid in holding the cleats of the tank, a stud-bolt fixed centrally in the cover, and a locking-bar on said bolt and adapted to engage the cleats to bind the covers in the manholes, said locking-bars being adapted for but slight longitudinal play on the stud-bolt, whereby the elasticity of the material of said bar will aid in holding the cover in place.

In testimony that I claim the foregoing as my invention I have hereunto set my hand in the presence of two subscribing witnesses.

F. J. ERNEWEIN.

Witnesses:
MICHAEL J. STARK,
KATE H. BRISTOL.