W. M. Smith,

Elevator.

No. 93,490. Patented Aug. 10, 1869.

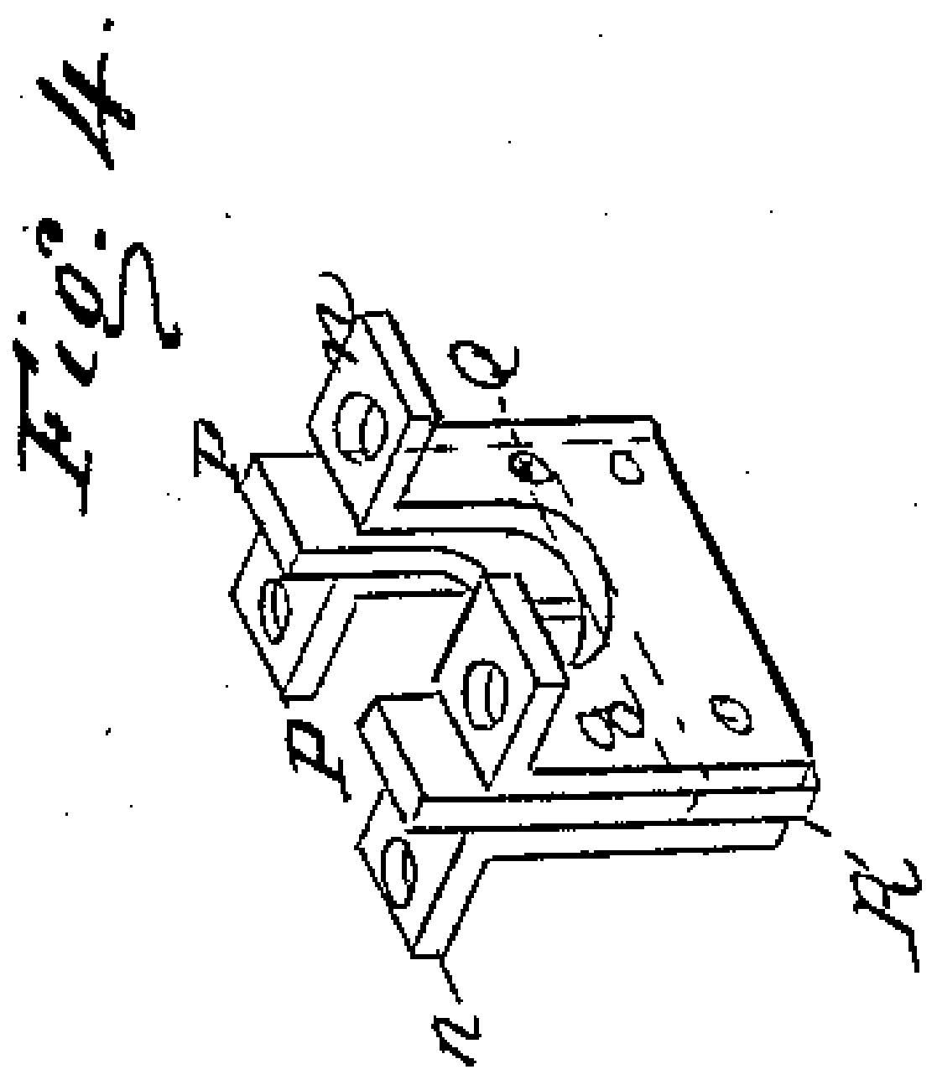
Fig. 4.

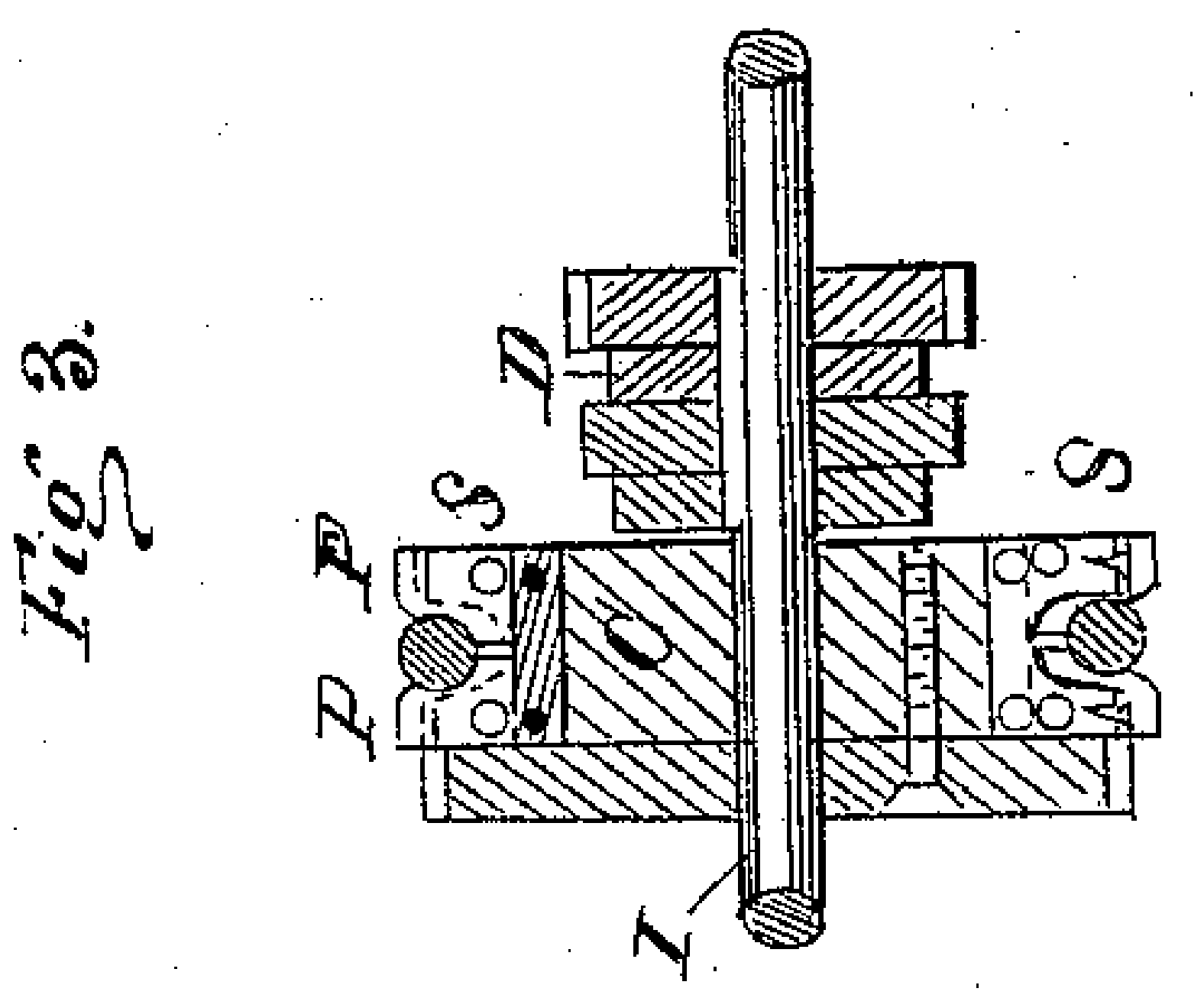
Fig. 3.

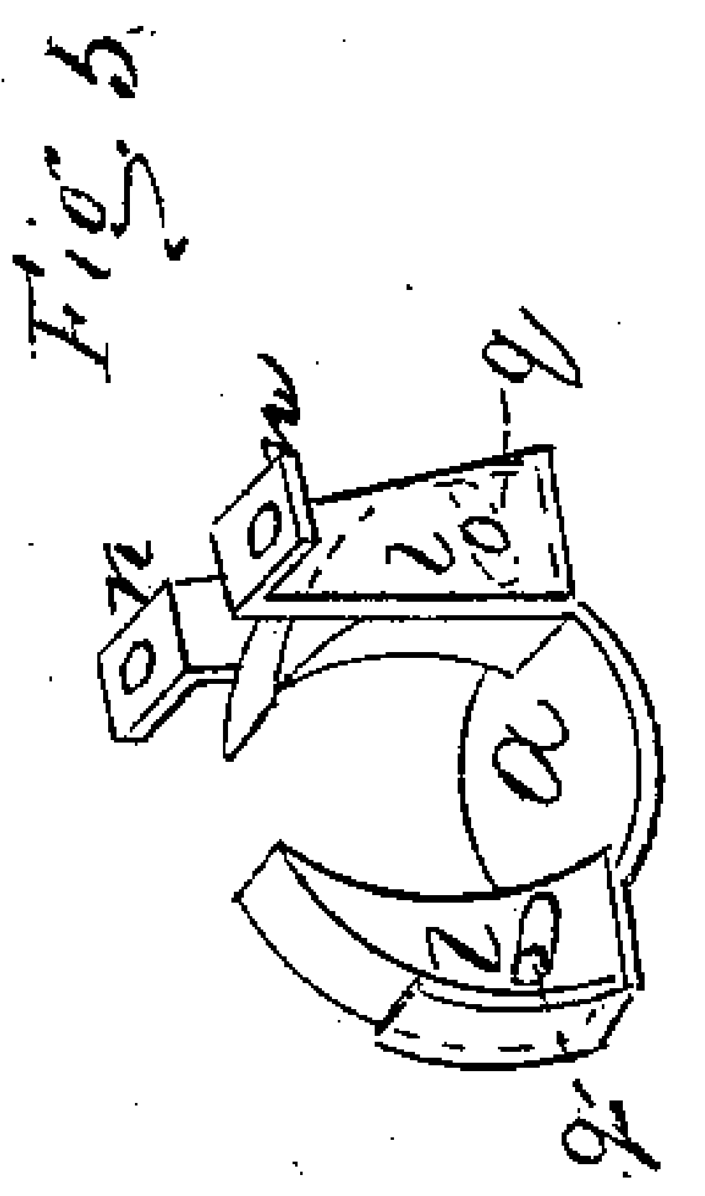
Fig. 5.

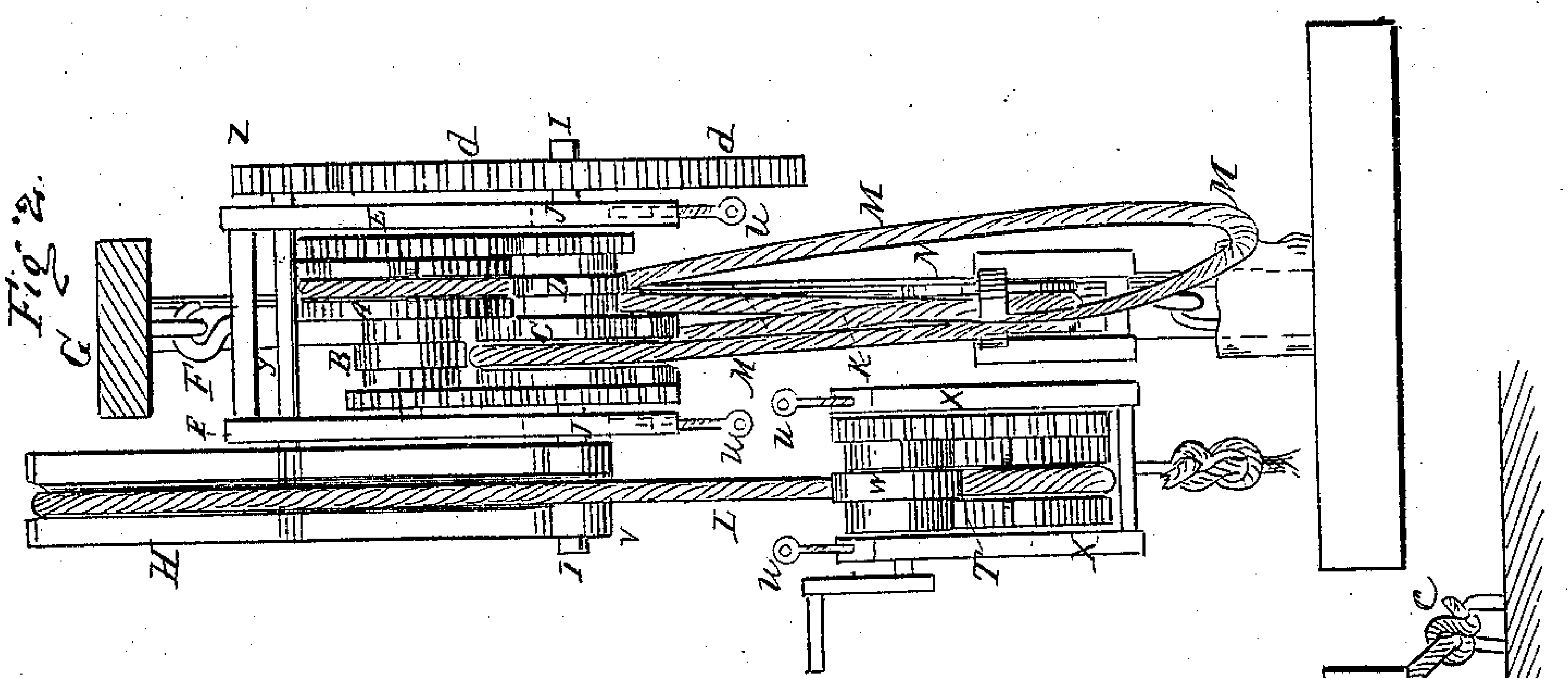
Fig. 2.

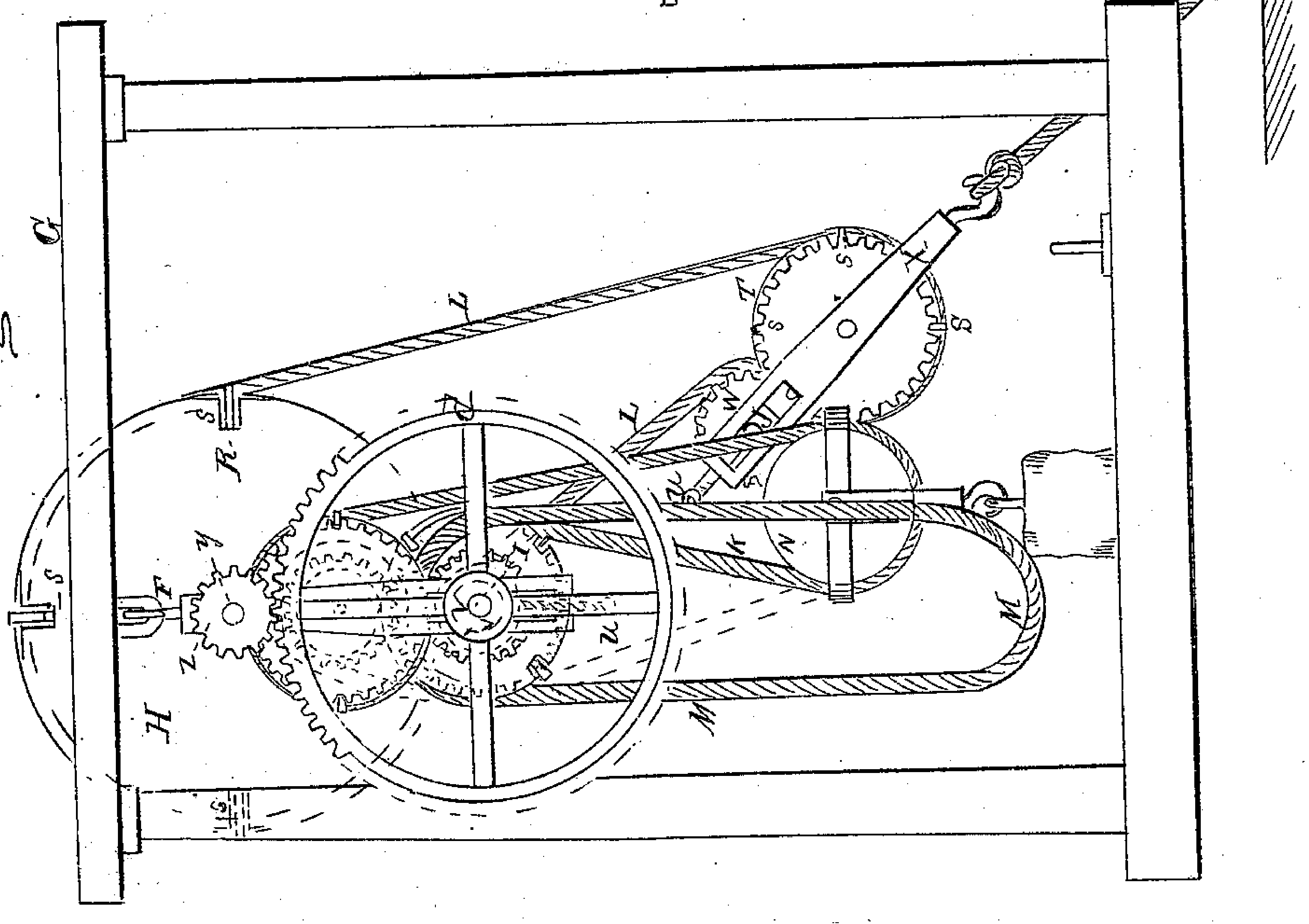
Fig. 1.

Witnesses:
G. Matthys.
D. Ballauf

Inventor:
William M. Smith

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

United States Patent Office.

WILLIAM M. SMITH, OF AUGUSTA, GEORGIA.

Letters Patent No. 93,490, *dated August* 10, 1869.

IMPROVEMENT IN HOISTING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, William M. Smith, of Augusta, in the county of Richmond, and State of Georgia, have invented a new and improved Power-Elevator; and that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figures 1 and 2 represent a front and end view of a combination of pulley-blocks and endless ropes, to which my improvements have been applied.

Figure 3 represents a section of the lower pulley-blocks C and D in figs. 1 and 2.

Figures 4 and 5 represent, also, sections of figs. 1 and 2, showing the spring-clamps in the periphery of the differential pulley-blocks.

Similar letters of reference, where they occur in the separate figures, denote like parts in all the drawings.

All combinations of pulley-blocks and ropes now known or used for the purpose of elevating weights, require a constant and vigorous holding on to that end of the rope paid off from the revolving block which elevates the object being raised, to prevent the same from receding.

In this particular my improvement differs from all others, and does not require the holding or fastening of any rope to prevent the object being elevated from receding, but will rigidly hold the same to the point attained in its elevation, whenever and as often as the revolving elevating-blocks shall be stopped.

In addition to this material feature of said improvement, I have also constructed, in combination with an endless cord, two small adjustable pulley-blocks, with one or two cranks, as may be desired, rigidly affixed to the shaft of the lesser one, for the purpose of driving the elevating-blocks when very heavy objects are to be lifted, whereby the power of one man is multiplied ten times when said cranks are but fourteen inches in length.

Having thus recited some of the beneficial results to be attained in the use of this improvement, I will now proceed to describe the same with reference to the drawings, that others skilled in the art may be enabled to manufacture and use my invention.

A B represent two pulley-blocks, of different diameters, with spur-wheels firmly affixed on the outer ends of each, and rigidly fastened together on the same horizontal shaft, the ends of which rest in the iron support or hanger E, suspended by hook F to cross-beam G.

The periphery of the pulley-block A must have a groove in the same, fully equal in width and depth to the diameter of the endless rope desired to be used in combination therewith, and a sufficient number of spring-clamps, properly spaced and inserted therein, to prevent the endless cord from slipping around the same when propelled by driving-pulley H.

Pulley-block A can be made of wood or iron. If made of iron, four or six places, according to the diameter of the same, must be properly shaped and moulded in the periphery thereof, for the insertion of said spring-clamps. If made of wood, their places can easily be cut with hand-saw and chisel.

Pulley-block B is very differently constructed from A, and can be made of wood, iron, or India rubber. The latter material is far preferable, and when used for that purpose should have on either side two iron supports, made in the usual shape of thin cast-iron washers, graduating in thickness from the centre to a thin edge, and having a diameter nearly equal to that of the rubber pulley B, required to be thus supported.

The periphery of pulley B can be made either plain, irregular, or grooved, but must not be wider on its face than the diameter of the endless rope to be placed and operated in the grooved peripheries of pulleys A and C.

Pulley-blocks C D are made in every respect the same as A B; C like A, and D like B, except that C revolves on its shaft, while D is rigidly fastened thereto, and revolves with the same.

The pulley-blocks A and C must have a diameter, reckoning from the base of the grooved peripheries of each, that will bring the outer surface of the endless cord to be placed and operated therein exactly upon a horizontal plane with the pitch-line of their respective spur-wheels.

The pulleys B and D should exceed one thirty-second of an inch in diameter that of their respective spur-wheels, reckoning from the pitch-lines of the same.

The pulley-blocks C D are placed directly underneath and geared with the blocks A B, D under A, and C under B, and are supported in that relative position by shaft I, resting in the adjustable bearings J J, which are snugly fitted in the slotted ends of hanger E.

Such an adjustment of the upper and nether differential pulley-blocks, as above set forth, is absolutely necessary, that each may have the same uniform action against the endless elevating-rope K, thereby driving the same between the upper and lower pulley-blocks, as fully represented in figs. 1 and 2.

When the differential pulley-blocks A B and C D have the same relative diameters, as set forth in figs. 1 and 2, the endless cord K must be applied, as therein represented.

To elevate an object, the driving-pulley H must be so revolved, by pulling the endless cord L, placed in