

I. COWLES.
PIPE HANGER.
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993,510.

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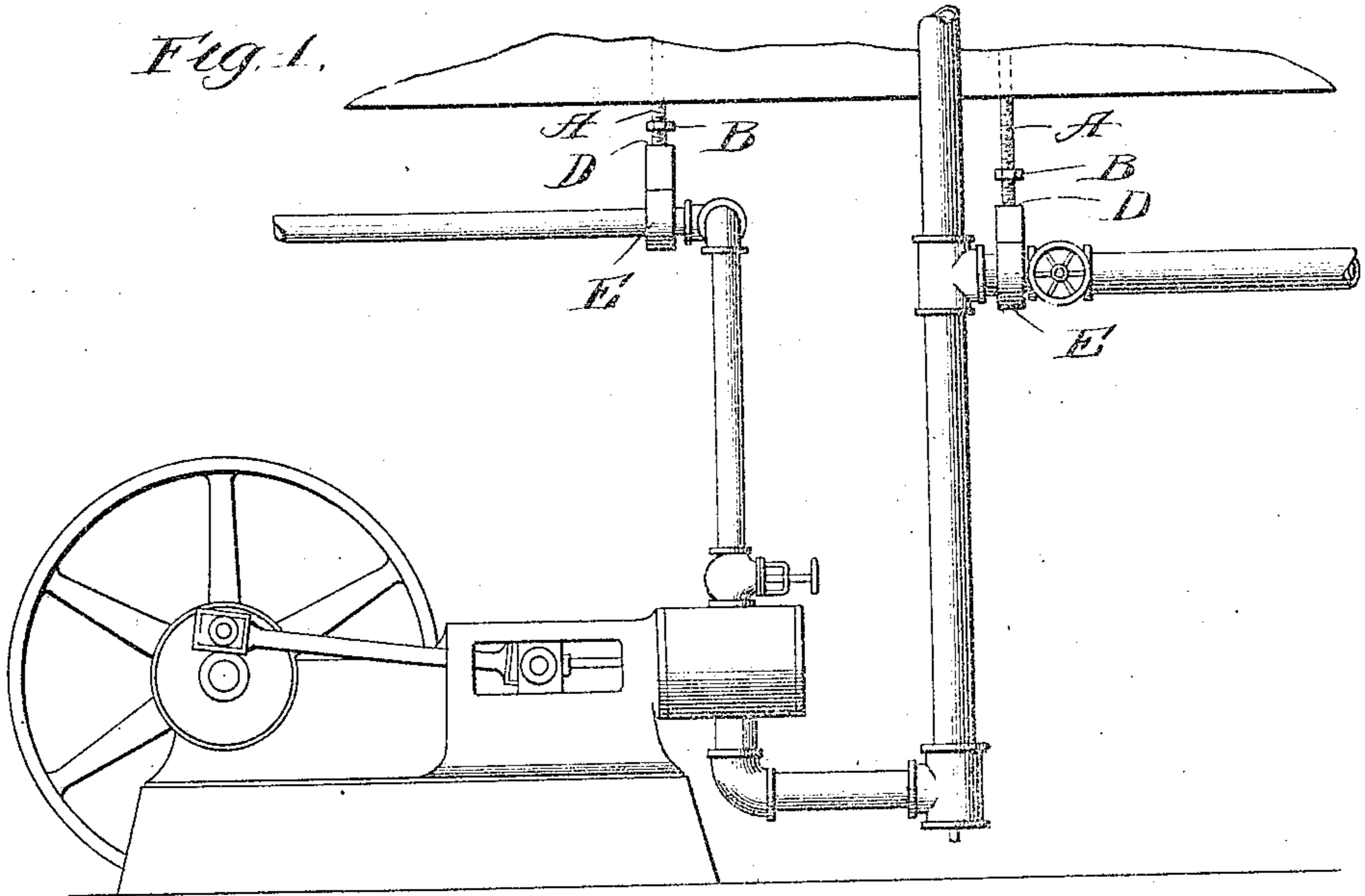


Fig. 2.

Fig. 3.

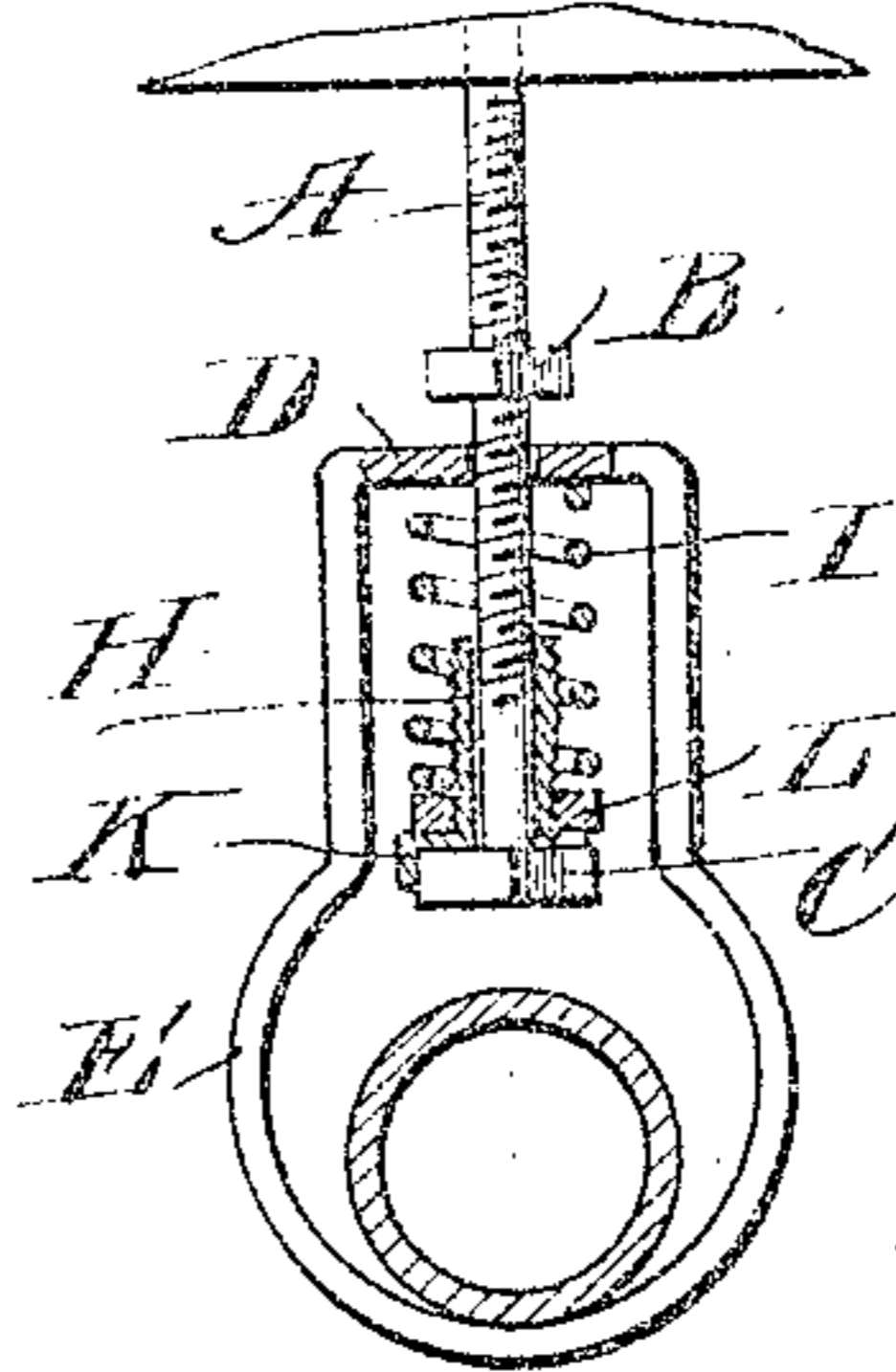
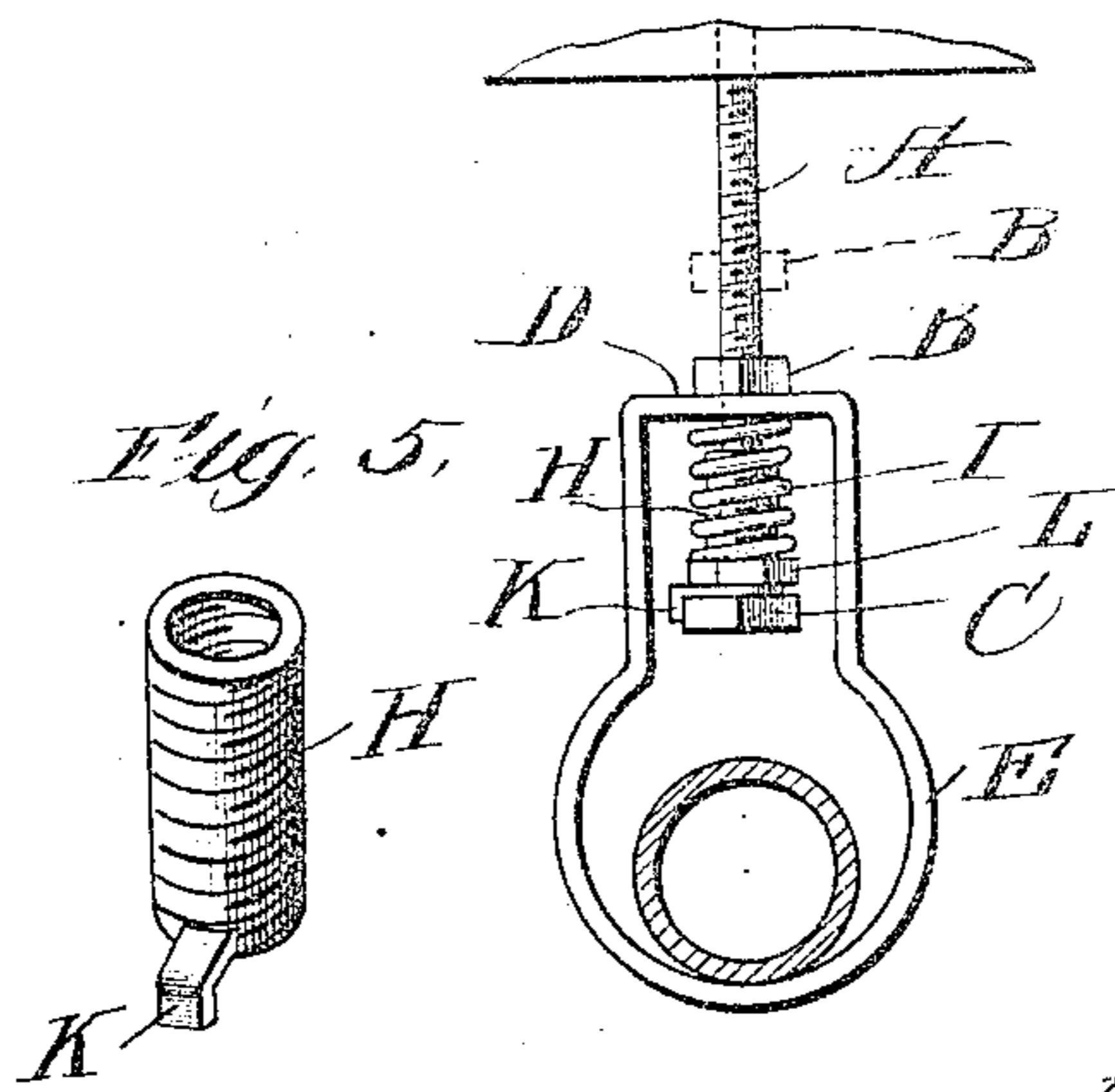
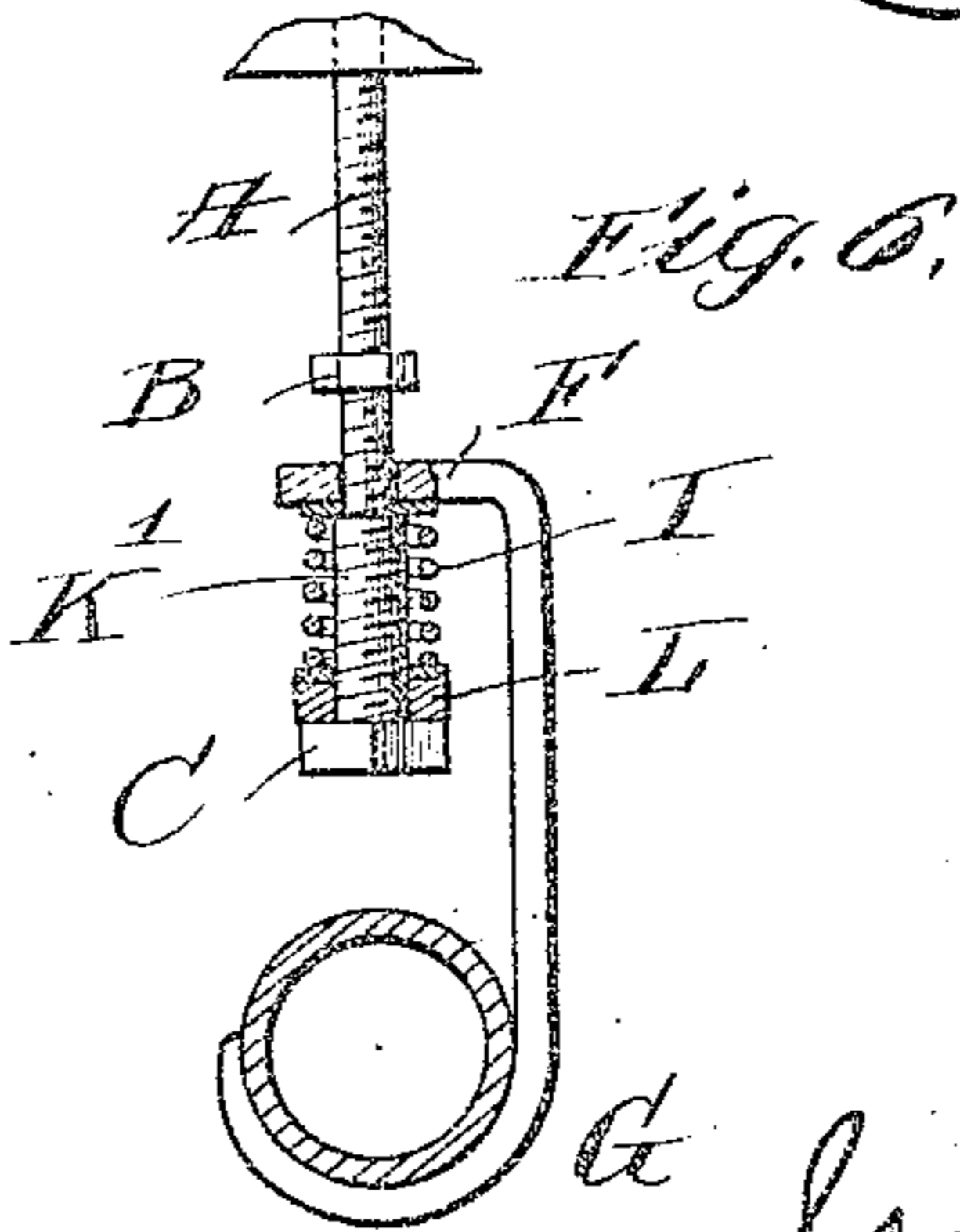
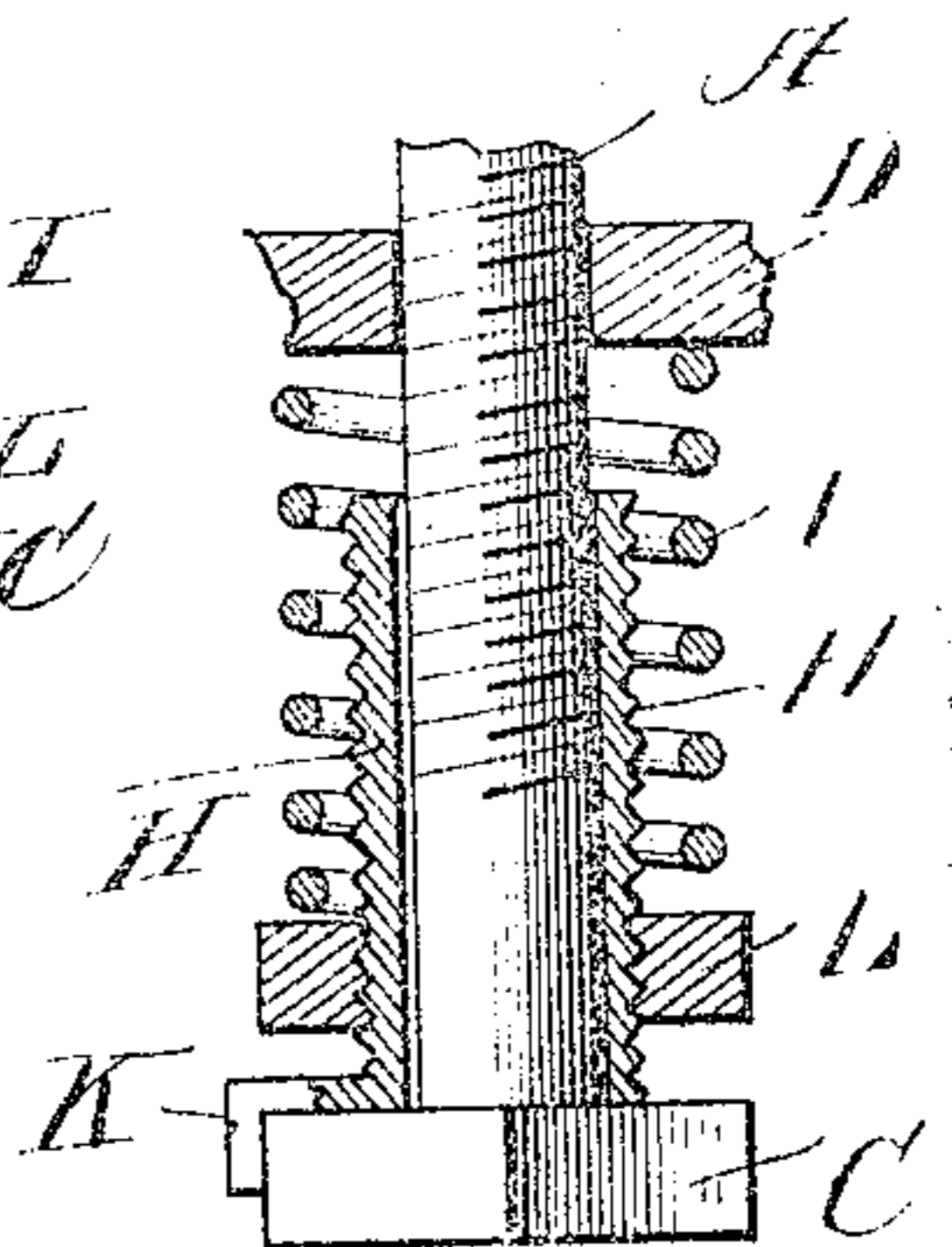


Fig. 4.



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UNITED STATES PATENT OFFICE.

IRVING COWLES, OF CHICAGO, ILLINOIS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO COWLES-MACDOWELL ENGINEERING CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

PIPE-HANGER.

993,510.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, IRVING COWLES, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Pipe-Hangers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in pipe hangers, the object being to provide a device of this character which will automatically take up expansion and contraction in the risers so as to continuously support the horizontal runs and thus relieve the joints of strains.

The invention consists in the features of construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawings illustrating a suitable embodiment of this invention: Figure —1— is a view in elevation showing the steam connections to and from a steam engine including horizontally and vertically disposed pipes, the former being supported from the ceiling by means of pipe hangers constructed in accordance with my invention. Fig. —2— is a view in end elevation of a pipe hanger embodying my invention showing the parts thereof in relative positions for primarily hanging the pipes when the latter are cold. Fig. —3— is a view similar to Fig. —2— showing the relative positions of the parts of the hanger when the pipes are hot and expanded. Fig. —4— is a fragmentary detail central vertical section of the hanger showing the means employed for determining the limit of relative movement of parts of the hanger in one direction. Fig. —5— is a detail perspective view of a sleeve employed. Fig. —6— is a view similar to Fig. —3— showing my invention embodied in a modified form of construction.

In hanging horizontal runs of pipe the hangers are adjusted to support the pipes at the requisite elevation. At the time of hanging the pipes the same are cold but when a hot fluid such as steam or hot water passes through the same they expand. The hangers ordinarily employed provide for freedom of longitudinal movement of the horizontal runs of pipe to permit expansion

and contraction of the same, but do not provide for vertical movement of the horizontal runs due to the expansion of risers effecting connection between the same and steam engines, pumps, radiators, etc. The latter are supported upon foundations, floors, etc., and the risers in expanding during passage of steam therethrough exert a separating force on the parts connected thereby. This force will act to raise the horizontal runs of pipes relatively to the hangers and to the part resting on a foundation or floor and thus throw the weight of said horizontal runs for a part of their length upon the engine, pump, radiator and the like or upon the elbow joints connecting said risers at their lower ends with short horizontal pipes in turn connecting with the engine or other part. The strains thus imparted act to produce leaks in the piping and also permit of lateral swing of the upper end portions of said risers and the contiguous portions of the horizontal runs which is also detrimental.

My invention has for its object to provide a pipe hanger which may be primarily adjusted to support the horizontal runs at the desired elevation relatively to the ceiling and the risers so as to throw the weight thereof on said ceiling, said primary adjustment serving to fix the limit of downward movement of the said horizontal runs, and, further, to provide means whereby, after primarily hanging the pipes as above stated, the weight thereof is thrown upon counterbalancing means adapted to carry the said pipes and support the same when raised by expansion of risers so as to relieve the joints of strains.

The hanger comprises a lag-screw A or similar vertical supporting member secured at one end to the ceiling in any suitable and convenient manner. The said screw or member A is threaded to receive a nut B and is provided with a head C. The said member A passes through the horizontal wall D of a loop E or as shown in Fig. —6— through the flange F at the upper end of the shank of a hook G. The lower end portion of said member A is annularly enlarged in any suitable manner, as, for example, by mounting an externally threaded sleeve H thereon which rests upon the head C thereof and which, at its upper end affords a support for said wall D or flange F. The nut

B is adapted to be disposed above the wall D or flange F and serves to limit the upward movement thereof relatively to said member A.

5 A helical compression spring I surrounds the sleeve H, the same, when fully expanded being of greater length than said sleeve. The latter is preferably held against rotation relatively to the member A in any suitable manner, as, for example, by providing
10 a projection J thereon which engages a face of the head C. Or, as shown in Fig. —6— the member A may be annularly enlarged as at K, the use of the sleeve H being deemed a
15 cheaper expedient. On said sleeve H or annularly enlarged portion K is a nut L upon which the said spring I rests, the latter being adapted to bear at its upper end upon the said wall D or flange F to yieldingly
20 support the latter. The carrying power of said spring I should be substantially equal to the weight of the contiguous riser M and the length of horizontal piping normally carried thereby, the force normally exerted
25 by said spring on the hanger being adjustable by varying the position of the nut L as will be obvious.

When hanging pipes the nut B is turned relatively to the member A to force the wall
30 D or flange F downwardly into contact with the upper end of the sleeve H or the shoulder formed at the upper end of the annular enlargement K of said member A against the action of said spring I, the said member
35 A being then adjusted relatively to the ceiling and to the engine, pump, radiator or the like connected by risers with the horizontal runs, so as to positively and rigidly support the latter during installation and there-
40 after when cold. After completion of the installation the said nut B is turned in the opposite direction until it acquires an elevation greater than any which may be attained by the upper wall D of the loop E or
45 the flange F of the hook G, thus throwing the weight of the piping upon the said spring I. The force exerted by the latter being substantially just sufficient to counter-
50 balance said weight without exerting an appreciable lifting force upon the risers and

parts connected therewith will remain under compression and as the risers expand and exert a lifting force on the horizontal runs of piping, said spring will follow up the latter and continue to support the weight
55 thereof and thus relieve the elbow joints, etc., at the lower ends of the risers and upon which the weight would otherwise fall, of strains due to imposing such weight thereon.

During the time that the piping is con-
60 tracted, the engines or other parts fed and exhausted thereby are not in action but when the piping is expanded such parts are usually in action and are exerting a vibrating power which is often transmitted
65 through the piping and hangers to the building. My invention serves to relieve this condition by providing a cushioning support for the piping while the engines, etc.,
70 are in action which serves to prevent or reduce transmission of vibration to the building.

I claim as my invention:

A pipe hanger comprising a supporting element adapted to be suspended from a
75 support, a pipe-carrying member, movably supported by said element, a spring interposed between said supporting element and said member for maintaining the latter at the upper limit of its movement relatively
80 to the former, and co-acting relatively-movable means for positively determining the lower position of said pipe carrying member during the operation of hanging pipes and
85 when the pipes are cold, said co-acting means operating against the action of said spring, one of said co-acting means adapted to be moved out of the path of said carrying member after the hanging has been com-
90 pleted, and said spring adapted to move said member to follow the pipes supported thereby as the latter are raised by expansion of the risers connected therewith.

In testimony whereof I have signed my name in presence of two subscribing wit-
95 nesses.

IRVING COWLES.

Witnesses:

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RUDOLPH WM. LOTZ.