(No Model.)

J. THOMPSON.

DREDGING MACHINE.

No. 341,613. Patented May 11, 1886.

Fig. 1.

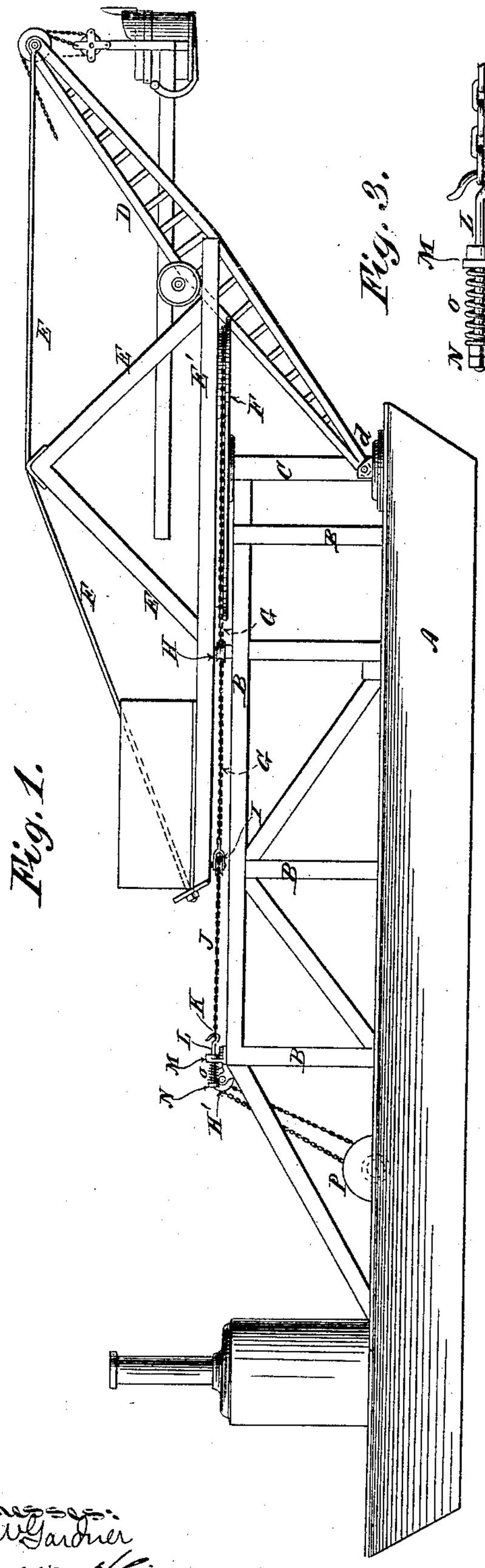


Fig. 3.

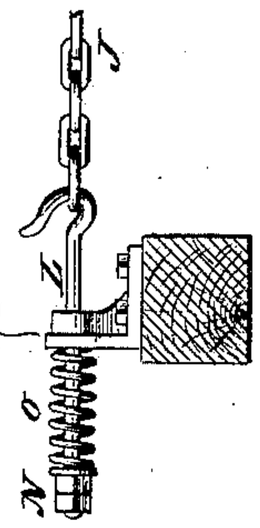
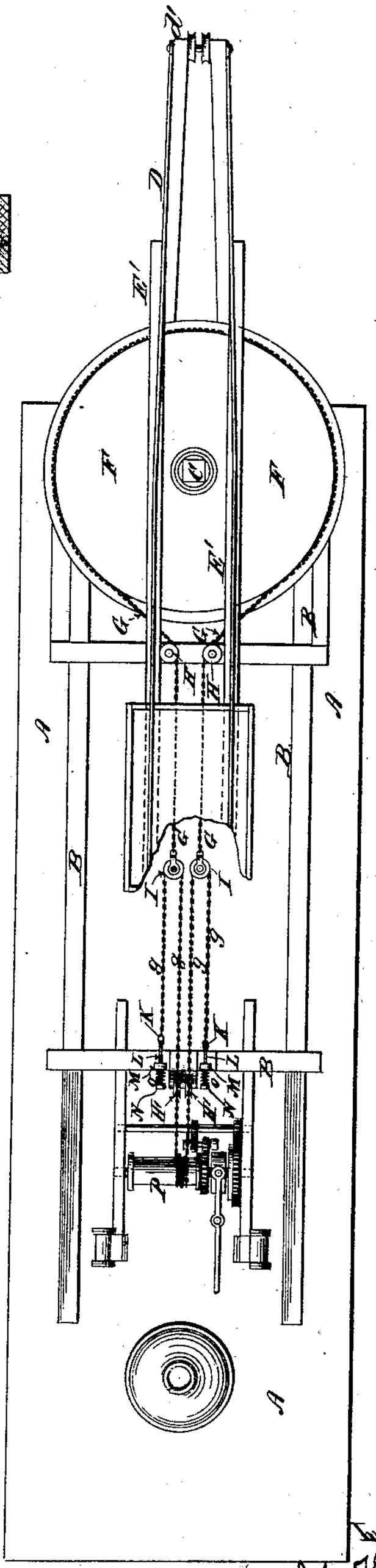


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN THOMPSON, OF BUCYRUS, OHIO, ASSIGNOR TO THE BUCYRUS FOUNDRY AND MANUFACTURING COMPANY, OF SAME PLACE.

DREDGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 341,613, dated May 11, 1886.

Application filed October 27, 1885. Serial No. 181,095. (No model.)

To all whom it may concern:

Be it known that I, JOHN THOMPSON, a citizen of the United States, and a resident of Bucyrus, in the county of Crawford and State of Ohio, have invented certain new and useful Improvements in Dredging-Machines, of which the following is a specification.

My invention relates to improvements in the mechanism employed for swinging the boom or load-carrying arm in the class of machines in which dredges, derricks, steam-shovels, and the like are embraced; and, more specifically stated, it consists, first, in a combination of devices, whereby the power which swings and controls the load during its swinging action may be increased, thereby securing more safe and absolute command over the load, and, second, in the introduction of elastic or yielding mechanism between the power and the load, whereby the shock or strain on the machine consequent on rapid action thereof, especially with heavy loads, will be taken up or absorbed, thus also inducing safety and reducing liability of fracture of the mechanism.

In the drawings the same reference-letters indicate like parts in all the figures. They represent my invention as appied to a dredging-machine; but, as above stated, it is equally applicable to other machines in which a rotatable load-supporting boom, arm, or table is to be moved or turned.

Figure 1 illustrates a side elevation of a dredge embodying my invention. Fig. 2 illustrates a top plan view of the same. Fig. 3 illustrates a detailed view of one method of constructing the elastic mechanism to prevent fracture of the parts consequent on jerk, &c.

A is the scow or float. B is a frame erected thereon for the support of certain parts of the mechanism.

C is the mast, which may be rigidly attached to the frame and to the scow, the rotatable upper parts turning upon it as a center, or it may itself be rigidly attached to the rotating parts and swivel on or in suitable supporting devices, all as usual in such structures.

D is a boom, suitably supported at its lower end, *d*, and carrying its load at the other end, *d'*, also as usual.

E E represent the swinging frame and its stay-rods, &c., for supporting and guiding the load-sustaining mechanism proper, all of which rotate with the load.

F F is a circular frame or wheel, which is preferably centered at the head of the mast. It is rigidly attached to the string-pieces E' of the frame E E, and is preferably made, as shown, in the form of a complete wheel grooved on its edge, within which groove the chain which swings the frame E E and the boom and its load will be held.

Instead, however, of the continuous or complete wheel F, segments of a wheel fastened to the frame E E may be used; or a part of the frame or a beam fastened crosswise thereon may be used, provided it extends laterally a sufficient distance to give the requisite leverage for the pull of the chains, they being attached to the ends thereof on each side of the frame E E. I prefer the wheel or segments thereof, however, because by their use the chain, being free to leave the groove as the mechanism revolves, will always pull on a tangent from the periphery, thus always maintaining a leverage equal to the radius of the wheel or segments thereof.

G G are chains, which, by preference, are the ends of a continuous chain which passes around the wheel F and takes firm hold on it, either by reason of its friction against the same, which will be found sufficient in most cases; or, if there shall not be sufficient friction to prevent slipping, then I employ teeth or like devices upon its periphery, which engage with the links of the chain, and which will make the wheel practically a "sprocket-wheel," so called. The chain may, however, be made in two separate lengths, the ends whereof are attached at suitable points on the wheel F, or on the laterally-extending parts of the frame E, if such extensions be used instead of the wheel.

H H and H' H' are idlers, which properly guide the chains G G, if such guiding is desirable, and I I are two sheaves attached to the free ends of these chains.

J J are two additional chains, which pass through the sheaves I I, respectively. Their ends (shown at K K) are attached to the frame B at any suitable point, or to any other suitable support. These connections may be rigid ones, if preferred; but in order to reduce the strain consequent on starting or stopping the swing

of a heavy load I prefer to attach these ends of the chains J J by means of an elastic connection of any suitable construction, and which may consist of a hook or an eyebolt, L L, which slides through a plate, M, which is rigidly attached to the frame B or other suitable support, the end of the shank of the hook or bolt being provided with a washer and nut or head, N, a stiff spring, O, being interposed between the plate M and the washer N. These devices are best seen in Fig. 3. The other ends of the chains J J, respectively, are attached to opposite sides of the drum P, which is turned by any suitable mechanism connecting with the engine or other source of power, as usual. Thus upon rotating the drum one of the chains will be wound up and the other unwound, the action being reversed when the drum is reversed.

If desired, the chains G G may be attached to the wheel F by elastic connections, as above described, to increase the elasticity of these parts; or the sheaves I I may be attached to the chains G G by like connections. Such additional yielding connections may be used in addition to the connections at the fast ends of the chains J J, and this feature may be employed when single chains extend directly from the wheel F or its equivalent to the drum B without the employment of the doubled chains J J; but I prefer the latter, because by their use the power is greatly increased, thus giving greater control over the load and greater safety in its movement.

If the elastic connections are applied to the chains G G, care must be taken that they are so placed on the wheel F or its equivalent, as above described, that the binding of the chain against them will not by the friction engendered interfere with the free action of the elastic connections.

It will be readily understood that ropes may be used instead of the chains G and J, and also that sections of rods may be employed instead of continuous chains or ropes as part thereof.

The operation of the several devices is obvious. The load, being suitably elevated, is swung to the desired extent right or left by the appropriate rotation of the drum P, whereby the chains J J are respectively wound up or unwound, as stated, exerting thereby a pull on the appropriate chain G G to effect the swinging in the desired direction. The springs O O are so stiff that during this pulling action they yield only sufficient to ease the starting of the rotatable mechanism and the load. When, however, the load has been swung as far as desired, the drum P may be stopped at once and the lowering action commenced, the strain or jerk occasioned thereby being taken up by the elasticity or yielding of the springs O O. Moreover, when the double chains J J are employed, the power will be so increased that the drum may be started rapidly and run rapidly, thus resulting in gain in speed during the swinging action, notwithstanding the fact that a greater amount of chain has to be wound up and unwound, because of the doubling thereof, and the load being so perfectly under control and prevented from exerting its weight injuriously, risk of fracture of the mechanism, and consequent accident to the workmen, is avoided.

I do not limit myself to the details of construction shown and described, since it will be obvious to those who are familiar with this art that they may be somewhat departed from and yet my invention be employed.

Having described my invention, I claim—

1. The combination, in a dredge or other like machine, of a rotatable boom, arm, or table provided with draft-chains attached thereto on opposite sides, sheaves on the ends of the chains, doubled chains passing through the sheaves, respectively, the ends whereof are attached to suitably-located elastic fastening devices, the other ends whereof, respectively, are attached to a rotatable drum, and mechanism for rotating the drum, substantially as and for the purposes set forth.

2. The combination, in a dredge or like machine, of a rotatable boom, arm, or table having draft-chains attached thereto on opposite sides, the free ends whereof are provided with sheaves, doubled chains running through the sheaves, respectively, the ends whereof are attached rigidly to the frame and to a rotatable drum, and suitable mechanism for rotating the drum, substantially as and for the purposes set forth.

Signed at New York, in the county of New York and State of New York, this 23d day of October, A. D. 1885.

JOHN THOMPSON.

Witnesses:
JOHN H. IVES,
JOHN J. CAULDWELL.