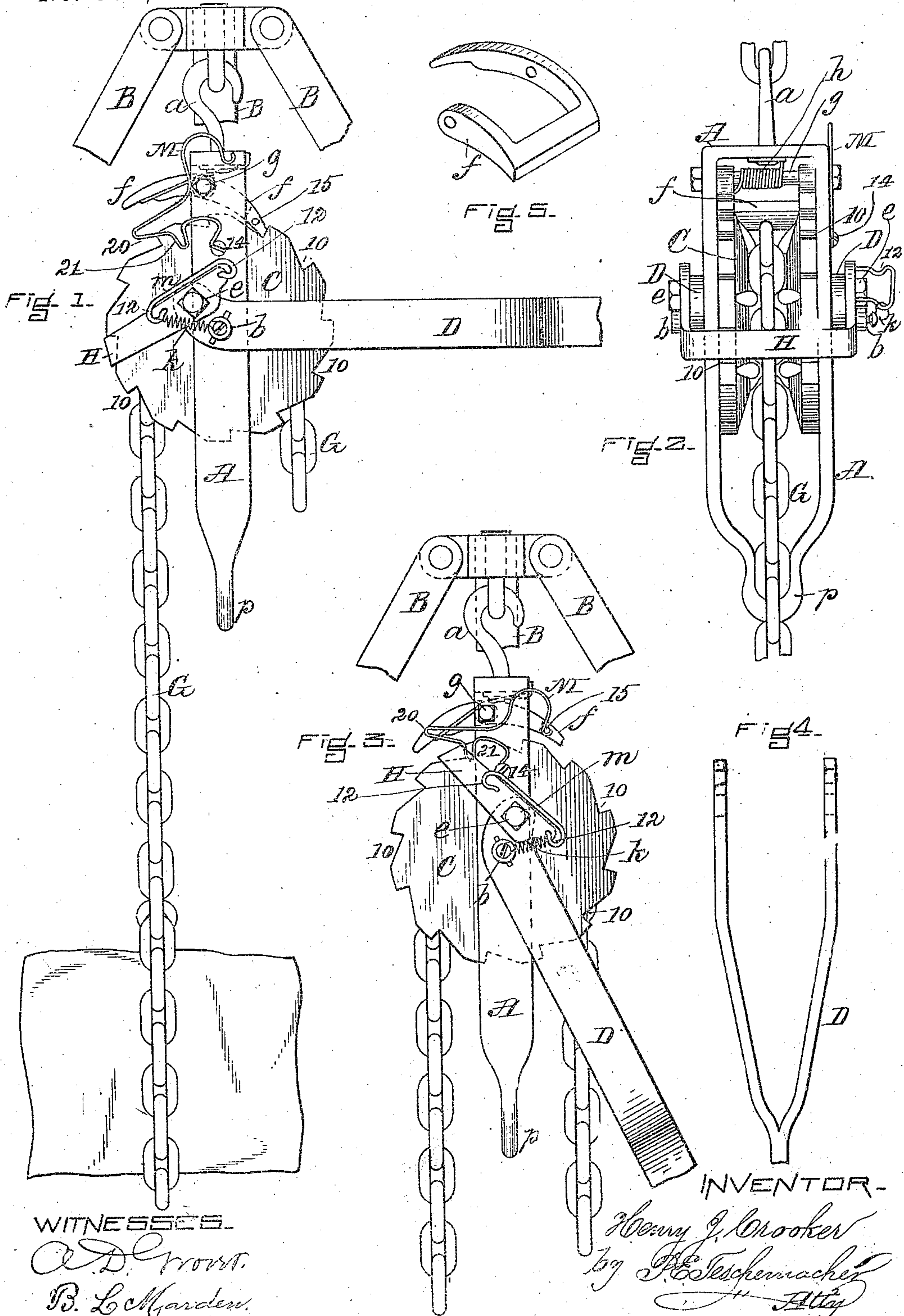


(No Model.)

H. J. CROOKER.
MACHINE FOR LIFTING STONE, STUMPS, &c.

No. 552,044.

Patented Dec. 24, 1895.



UNITED STATES PATENT OFFICE.

HENRY J. CROOKER, OF LACONIA, NEW HAMPSHIRE.

MACHINE FOR LIFTING STONE, STUMPS, &c.

SPECIFICATION forming part of Letters Patent No. 552,044, dated December 24, 1895.

Application filed November 1, 1895. Serial No. 567,649. (No model.)

To all whom it may concern:

Be it known that I, HENRY J. CROOKER, a citizen of the United States, residing at Laconia, in the county of Belknap and State of New Hampshire, have invented certain Improvements in Machines for Lifting Stone, Stumps, and other Heavy Articles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation of my improved machine, showing the parts in the position they occupy in raising the load. Fig. 2 is an end elevation of the machine. Fig. 3 is a side elevation similar to Fig. 1, showing the parts in the position they occupy in lowering the load. Figs. 4 and 5 are details to be referred to.

My invention relates to certain improvements in machines for lifting stone, stumps, and other heavy articles, and has for its object to improve the construction of such machines, whereby they may be operated with a single hand-lever to raise or lower the load more easily and conveniently than heretofore; and to this end my invention consists in certain novel combinations of parts and details of construction, as hereinafter set forth and specifically claimed.

In the said drawings, A represents the frame of the machine, which is provided at its upper end with a swiveling-hook *a* to adapt it to be suspended from a clevis attached to sheers B or other suitable support.

C is a chain or sprocket wheel which rotates between the sides of the frame A upon a shaft or spindle *b*, passing through said frame and projecting a short distance beyond the same at each end, forming pivots on which is fulcrumed a long hand-lever D, which is forked, as shown in Fig. 4, to embrace the frame A.

G is the hoisting-chain passing around and engaging the sprocket-wheel C, which is provided with side flanges having ratchet-teeth 10, which are engaged by the operating-pawl H, made in the form of a stirrup or loop, as shown in Fig. 2, and having its two ends pivoted at *e e* to the upwardly-turned ends of the two branches of the lever D, whereby as the latter is operated the pawl H is raised and lowered and caused to successively engage

the ratchet-teeth 10 and rotate the chain-wheel to raise the load as desired, an exceedingly powerful leverage being exerted in consequence of the short distance between the pivots *e e* and the ends of the shaft *b*, on which the hand-lever is fulcrumed, and as the fulcrum of the hand-lever is in line with the axis of the chain-wheel a uniform draft or leverage is exerted upon the pawl to lift the load in any position of the hand-lever.

f is the retaining-pawl, which is made in the form of a loop, as seen in Fig. 5, said pawl being pivoted on the rod *g* and kept in contact with the ratchet-teeth 10 of the chain-wheel by a light spring *h*, Fig. 2, coiled around the rod *g*.

k is a spiral spring, one end of which is fastened to one end of the shaft *b*, its opposite end being connected with and adapted to slide upon a wire loop *m*, projecting from the inner end of one side of the operating-pawl H, said loop extending an equal distance on both sides of the pivotal point *e* of said pawl, so that by shifting the spring to the left-hand end of the loop, as shown in Fig. 1, it will exert a downward draft or pull upon the pawl H to keep the same in contact with the ratchet-teeth when the load is being raised, while when the spring *k* is shifted to the opposite or right-hand end of the loop, as shown in Fig. 3, it will exert an upward draft or pull upon the pawl as required in the operation of lowering the load, as hereinafter described.

The loop is provided with a depression or notch 12 at each end to retain the spring *k* in place when adjusted, and by securing the spring *k* to the shaft *b* it will act with a uniform tension on the pawl H to raise or depress the same in any position of the hand-lever.

M is a bent-wire spring, one end of which is permanently fastened to the frame A at 14, the opposite end being detachably secured to a pin 15 projecting from the retaining-pawl *f*, said pawl being connected with the spring, as shown in Fig. 3, only when the load is being lowered, and being disconnected therefrom, as shown in Fig. 1, when the load is being raised. The spring M is provided with an inclined portion 20, which, when said spring is connected with the pawl *f*, lies in the path of the pawl H, which, as it is raised, is brought

into contact therewith for a purpose to be presently explained, and beneath the portion 20 the spring is provided with a projection 21, which, when struck by the pawl H, causes the spring to be compressed in such manner that it will raise the retaining-pawl *f* against the resistance of its spring *h* and thus release the chain-wheel as necessary in lowering the load.

10 When the load is to be lowered, the spring M is hooked onto the pin 15 of the pawl *f* and the spring *k* shifted over to the left-hand side of the loop *m*, as shown in Fig. 1, when it will lift the operating-pawl H and hold it out of engagement with the ratchet-teeth until in its upward movement it comes into contact with the inclined end 20 of the spring M, which deflects the said pawl down into the two opposite ratchet-teeth near the top of the chain-wheel, and as soon as the pawl has fairly engaged these teeth it strikes the projection 21, and by its pressure thereupon as the hand-lever is still farther depressed causes the upper arm of the spring to raise the pawl *f*, as shown in Fig. 3, against the resistance of its spring *h* to release the chain-wheel C and permit the load to be lowered under the control of the hand-lever D, the weight of the load having been taken off the pawl *f* to permit it to be raised by the spring M by the slight movement of the chain-wheel as the hand-lever was depressed to bring the pawl H into contact with the projection 21. As the hand-lever is allowed by the hand to rise in lowering the load, the pawl H remains in contact with the spring M long enough to prevent the retaining-pawl *f* from dropping back into the ratchet-teeth from which it was last raised; but as soon as the projection 21 of the spring M is relieved of the pressure of the pawl H the pawl *f* is carried down by its spring *h* into a position to engage the next two opposite ratchet-teeth ready for a repetition of the lowering operation, the load being lowered one notch only at a time and there being no possibility of its slipping or getting away from the control of the person operating the machine.

If it should be desired to use a pulley, the chain can be passed through the block and hooked into the loop *p* at the bottom of the frame A, in which case greater lifting power would be exerted with a slower movement of the load, or if desired the chain can be merely passed under the article to be raised and hooked into the loop *p*.

By means of the above-described machine a load can be easily lowered by one person, as the retaining pawl is operated automatically by the movement of the hand-lever to release the chain-wheel at the desired time.

Furthermore, the machine is simple, durable, and not liable to get out of order.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a machine for lifting stone, stumps, &c., the combination with the frame, of the chain-wheel provided with ratchet-teeth and mounted on a shaft supported in said frame, the hand-lever fulcrumed in line with the axis of the chain-wheel, the operating-pawl pivoted to the hand-lever near its fulcrum and engaging the ratchet-teeth of the chain-wheel, said pawl carrying a loop at its inner end, a spring connected with said loop and adapted to be shifted to either end of the same to produce a downward or upward draft on the said operating-pawl, a retaining-pawl *f*, for the chain-wheel, and the spring M, detachably connected with the pawl *f*; said spring serving to throw the operating-pawl into the ratchet-teeth of the chain wheel in the operation of lowering the load, and when acted upon by said operating-pawl, raising the retaining pawl out of engagement with said ratchet-teeth to release the chain wheel and permit the load to be lowered under the control of the hand-lever, substantially as set forth.

2. In a machine for lifting stone, stumps, &c., the combination with the frame A, of the chain-wheel C, mounted on a shaft *b*, supported in said frame, said chain-wheel being provided with side-flanges having ratchet-teeth, the hand-lever D, fulcrumed on the ends of the shaft *b*, the stirrup-shaped pawl H, pivoted at *e, e*, to the upturned ends of the hand-lever near its fulcrum and engaging the ratchet-teeth of the chain-wheel, the loop *m*, secured to the pawl H, and extending on each side of its pivotal point, the spring *k*, connected with said loop and adapted to be shifted to either end of the same to produce a downward or upward draft on said pawl H, the retaining pawl *f*, for the chain-wheel, and the spring M, detachably connected with the pawl *f*, and provided with an incline 20, for throwing the pawl H, into the ratchet-teeth of the chain-wheel in the operation of lowering the load, and having a projection 21, adapted to be struck by said pawl H, whereby the spring M, is caused to raise the pawl *f*, out of engagement with the ratchet-teeth of the chain-wheel to release the same, all constructed to operate substantially as described.

Witness my hand this 30th day of October, A. D. 1895.

HENRY J. CROOKER.

In presence of—

DANIEL KELLOGG,

JAMES E. HARKINS.