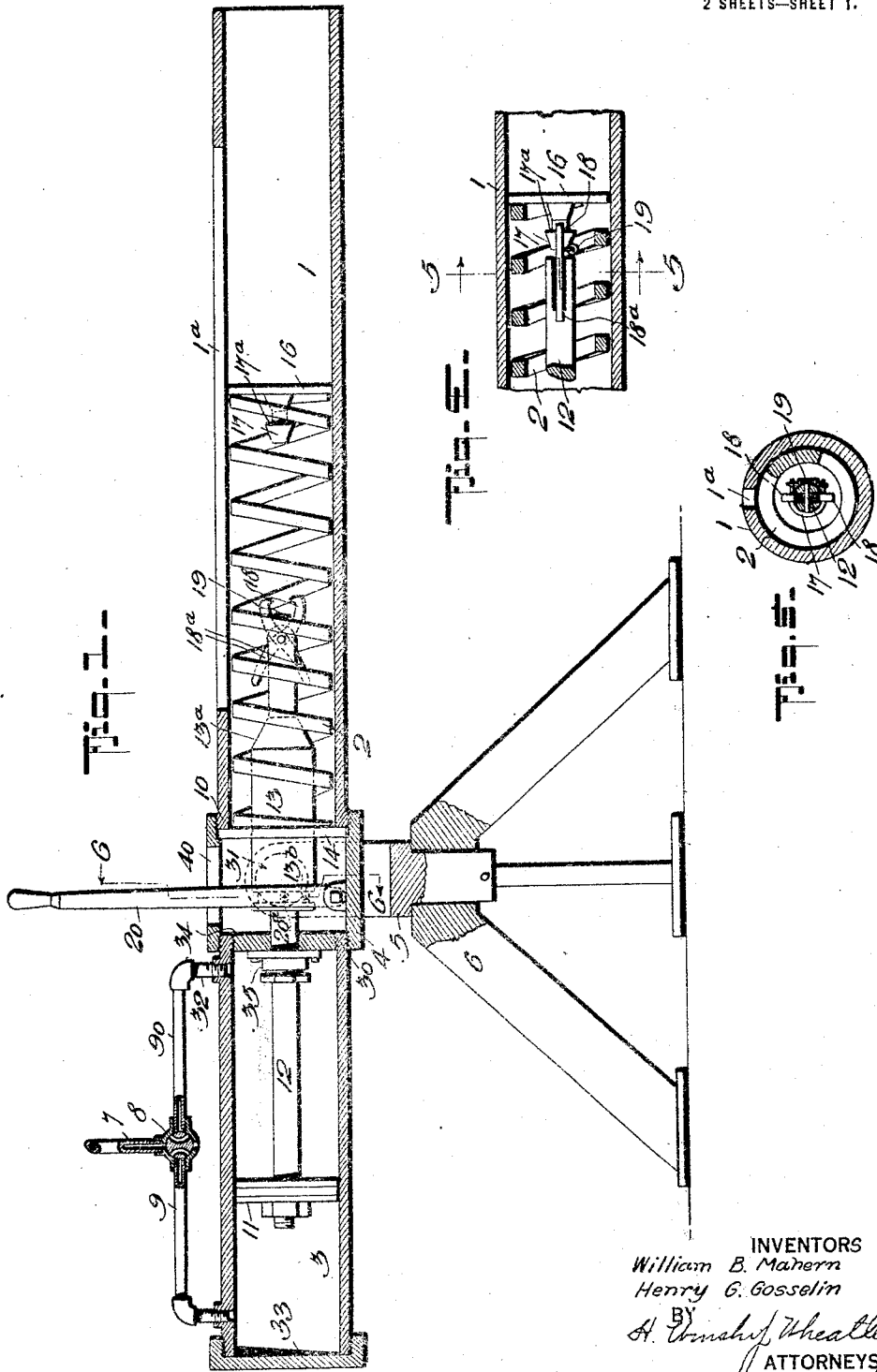


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LOG DISLODGING AIR GUN.
APPLICATION FILED MAY 29, 1920.

1.366,577.

Patented Jan. 25, 1921.
2 SHEETS—SHEET 1.



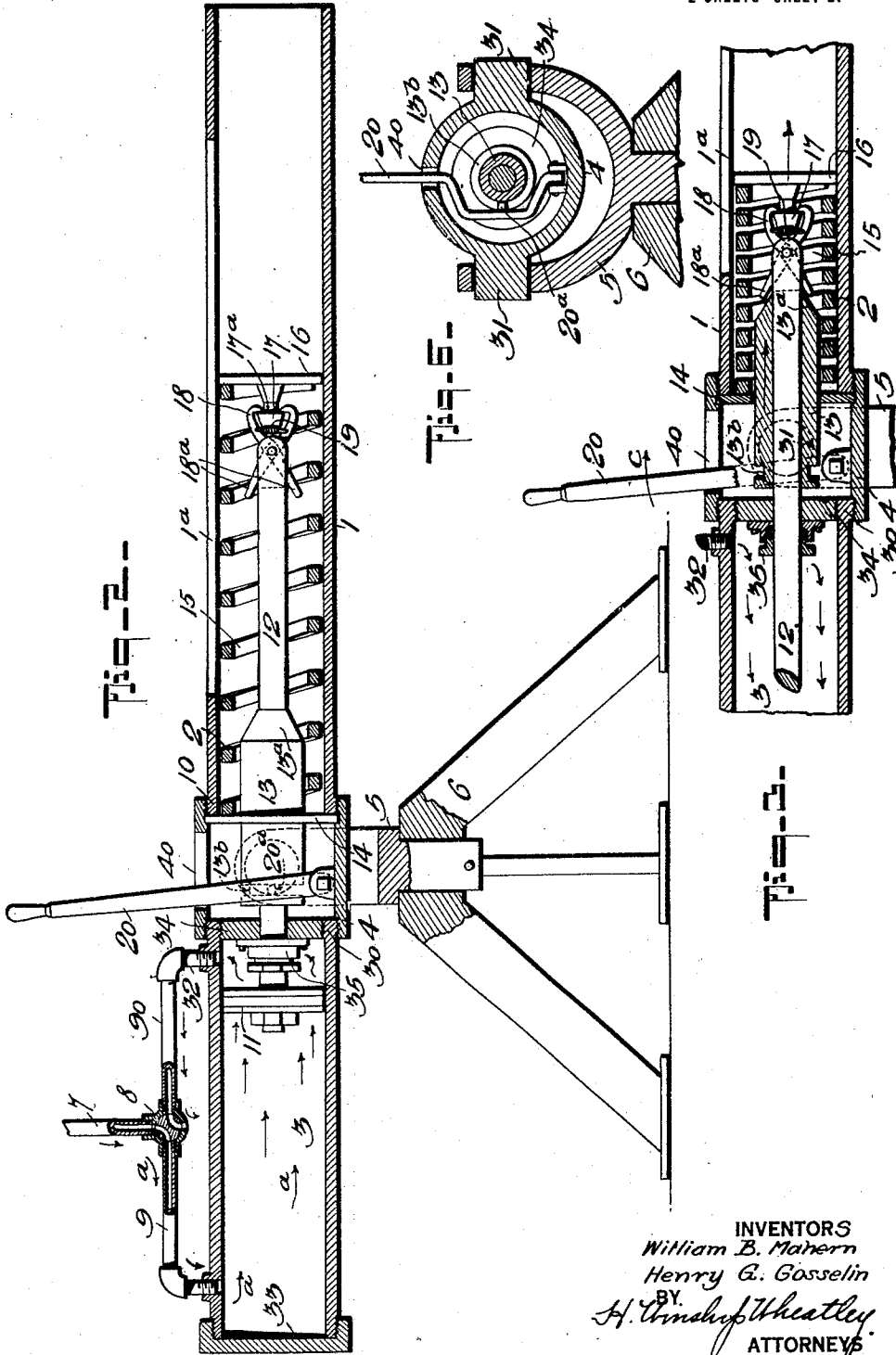
INVENTORS
William B. Mahern
Henry G. Gosselin
BY
H. Wmshy, Wheatley
ATTORNEYS

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UNITED STATES PATENT OFFICE.

WILLIAM B. MAHERN AND HENRY G. GOSSELIN, OF BERLIN, NEW HAMPSHIRE.

LOG-DISLODGING AIR-GUN.

1,366,577.

Specification of Letters Patent.

Patented Jan. 25, 1921.

Application filed May 29, 1920. Serial No. 385,219.

To all whom it may concern:

Be it known that we, WILLIAM B. MAHERN and HENRY G. GOSSELIN, citizens of the United States, residing at Berlin, in the county of Coos and State of New Hampshire, have invented a new and useful Log-Dislodging Air-Gun, of which the following is a specification.

Our invention has for its purpose to provide an improved means that is especially designed to be used for dislodging pulp wood in logging communities and where the wood accumulates in such large piles, frequently containing as much as fifty or sixty thousand cords, which when it becomes necessary to handle the wood for pulp mill uses, is dislodged and removed with considerable difficulty in pulling the piles down, after large amounts have been removed from the base of the accumulation and necessitating the use of explosives under great danger of personal injury to those using the same.

Primarily, our invention has for its object to provide a simple, inexpensive and easily manipulated means, in the nature of an air gun, that can be, with absolute safety and with much efficiency, so utilized that when a large quantity of the wood projects at an elevation too high to be reached by ordinary means, a projectile (a heavy log of wood) can be shot at the tower of wood, under sufficient force, to make it fall and with perfect safety to employees.

Our invention comprehends an air gun that embodies the peculiar features of construction and novel combination of parts, all of which will be fully explained in the following description, specifically pointed out in the appended claims and illustrated in the accompanying drawings, in which:

Figure 1 is a longitudinal section of our construction of air gun, the parts being shown with the projectile ejecting means at the distended or normal position.

Fig. 2 is a similar view, the piston shifted grabbing dogs being positioned forward in engagement with the compression spring pull back knob.

Fig. 3 is a detail section illustrating the parts in position for the insertion of the load.

Fig. 4 is a horizontal section on the line 4-4 on Fig. 1.

Fig. 5 is a transverse section taken on the line 5-5 on Fig. 4.

Fig. 6 is a detail cross section on the line 6-6 on Fig. 1.

In the practical development of our invention, the same embodies, essentially, a barrel 1 into the outer open end of which is inserted the projectile to be ejected, in practice, a wooden log of suitable diameter and length, an ejecting member 16 on the end of a compression spring 2 that is located within the barrel 1, and a shifting mechanism operable within the said barrel, under fluid impelled piston action, for placing the spring under tension, a device being also included for releasing the spring, when under tension, at predetermined times, whereby, as the said spring expands, the projectile is ejected.

A grab device, presently more fully explained, that is also fluid controlled in its movement, is provided for pulling back the said spring to place it under tension.

As is clearly shown in the drawings, the barrel 1 is located in line with a working cylinder 3, which latter and the barrel 1 are joined with a centrally disposed connecting sleeve 4, the opposite ends of which are internally threaded for receiving the externally threaded ends 10 and 30 of the barrel 1 and the cylinder 3.

The sleeve 4 referred to, is rockably supported on its trunnions 31-31 in a turn table bracket 5 swivelly secured upon a suitable base 6, as shown.

7 designates the intake or feed pipe, in practice joined with a suitable source of compressed air supply, and the said intake pipe joins with a three way valve 8, which, when adjusted to the position shown in Fig. 1, cuts off the fluid pressure from either end of the working cylinder 3 and, when adjusted as in Fig. 2, it leads the air through the pipe section 9 into the rear end of the piston head 11 (see arrows *a*), the air in front of the said head 11, during such adjustment, exhausting through the pipe 32 into the pipe section 90, through the valve 8 to atmosphere.

33 designates the outer or cap head for the cylinder 3, and 34 indicates the forward or inner cylinder head, the said head 34 being centrally apertured and carries a bearing gland 35, the latter with the head 34 constituting a guide through which the piston 12 passes, the said rod being also guided in and passes through a starting stem sleeve 13 that moves in a steel disk 14, which

is fixedly held in the adjacent threaded end of the center connecting sleeve 4 and to which is welded the inner end of the compression spring 2, which projects into the barrel 1, as is clearly shown in Figs. 1 and 2, by reference to which it will be also seen that the starting sleeve 13 has a tapered forward end 13^a, the purpose of which will presently appear, and the said sleeve extends some distance within the inner or stationarily held end of the aforesaid tension spring 2.

16 designates what is hereinafter termed a plunger disk and the said disk snugly fits the bore of the barrel 1 and is welded or otherwise made fast to the forward end of the coil tension spring 2 and, at the inner side, the said plunger disk has a conical knob 17 formed with a locking shoulder 17^a for coöperating with a grab device that is carried on the forward end of the piston 12.

The grab device consists of two clamping jaws or dogs 18—18 and they are pivotally joined, scissors-like, to the piston rod 12 and the outer or grab ends of the said dog 5 are curved inwardly for riding over and snapping into interlocked engagement with the conical knob 17, when the piston rod 12 is moved forward, as will be presently explained.

The grabbing ends of the jaws 18—18 are normally held closed by a retractile spring 19 and the rearwardly extended ends 18^a—18^a of the dogs are divergently extended for receiving the beveled head 13^a of the starting sleeve between them, during the operation of effecting the release of the grab device from the plunger disk.

To avoid the cushioning of air within the barrel 1, during the operation of pulling back or storing tension in the spring 2 the said barrel is slotted as at 1^a (see Figs. 1, 2 and 5).

At the rear ends, the starting sleeve 13 has an annular groove 13^b into which projects a stud 20^a on a starting lever 20 that extends through and is laterally shiftable in a slot 40 in the top of the connecting sleeve 4.

The lever 20 is pivoted at its lower end on the inside of the bottom of the sleeve 4 and, in practice, the said lever has sufficient swing to slide the sleeve 13 along the piston rod for effecting the release of the grab device before mentioned.

From the foregoing description taken in connection with the drawings, the complete construction, the manner of its operation and the advantages of our invention will be readily apparent to those familiar with the operation of dislodging logs.

The gun is so mounted that it can be adjusted at almost any desired angle and vertically and horizontally rotated for directing the projectile, as desired.

To operate the gun, assuming the parts to

be in the desired position shown in Fig. 1, air is applied to the outer end of the working cylinder (see arrow *a*) against the piston 11, thereby forcing the piston and its rod toward the opposite end of the cylinder and causes the dogs 18 of the grab device to engage and interlock with the knob 17, the resiliency of the spring 2 taking up any undue shocks.

By proper adjustment of the valve 8, the working fluid is caused to go into the opposite end of the cylinder 1, which will force the piston 11 back and thereby compress the spring until the diverged arms of the dogs 18 reach over the tapered end 13^a of the starting sleeve 13 (see Fig. 3).

The projectile (log) is then inserted into the barrel with the inner end abutting the plunger or ejecting disk 16.

The lever 20 is then swung over in the direction of the arrow *c* Fig. 3, causing the starting sleeve to disengage the grab dogs 18 from the knob 17, thereby freeing the stored up spring 15, and causing the gun to discharge the projectile in the direction for which the gun has been adjusted.

While the general arrangement of the parts, as shown in the drawings, illustrates a preferred and practical construction, it is understood that the details shown and described may be readily modified or varied without departing from our invention as comes within the scope of the appended claims.

What we claim is:

1. In an apparatus of the class described, a centrally disposed sleeve-like body, a barrel projected from one end of the sleeve, a piston contained cylinder projected from the other end of the said sleeve-like body, the cylinder and its piston being in longitudinal alinement with the barrel, fluid pressure means connected with the cylinder and adapted, under proper adjustment, for reciprocally actuating the piston, a coil spring, a projecting element that engages the outer end of the spring, and a device connected to and movable with the piston, the said device including a grapple that engages and connects with the projecting element on the outer end of the spring, as the device moves outwardly under piston action and as the spring expands, and which is also adapted, under piston action, to pull the said ejector and the coil spring back, whereby to place the spring under tension, and means for releasing the grapple from the ejector, whereby to free the spring under tension and permit it to impel the ejector.

2. In an apparatus of the class described, a body sleeve, a barrel extended from one side of the sleeve, a coil spring and a projecting member coöperating with the spring and mounted within the barrel, and a fluid pressure operated device including a grip-

ping member, the said device and member being mounted within the coil spring, the projecting member having a head with which the gripping member interlocks, when it is carried under fluid pressure to its outermost position, and lever controlled means for effecting the release of the gripping member, when the spring and the ejector are at their innermost adjustment, and held under tension, whereby to permit the forward projection of the spring and its co-engaging projector element.

3. In a device of the class described, a barrel, a projection spring anchored at one end in the barrel, a head at the free end of the spring, a fluid pressure operated grapple device to grasp said head and draw back the spring, and means for releasing the grip of said grapple, said last named means comprising a lever controlled member slidable along the grapple device and adapted to release the grip of said grapple device, when moved into engagement with the same.

4. In an apparatus of the class described, a barrel, a projection spring in the barrel, a cylinder and piston, a piston rod connected to the piston and projecting into the barrel, a grapple on the rod, a member at the outer

end of the spring adapted to be grasped by the grapple, fluid pressure means for moving said piston to project and retract the rod to thereby cause said grapple to grasp the spring member and compress the spring, and lever controlled means slidable along the rod to release the said grapple, when it is desired to free the said spring, when held under tension.

5. In an apparatus of the class described, a barrel, a projection spring in the barrel, a cylinder and piston, a piston rod connected to the piston and projecting into the barrel, a grapple on the rod, a member at the outer end of the spring adapted to be grasped by the grapple, fluid pressure means for moving said piston to project and retract the rod to thereby cause said grapple to grasp the spring member and compress the spring and means to release the said grapple, when it is desired to release said spring, said last named means comprising a sliding cone and said grapple comprising levers and a spring to hold said levers to the grasping position, and means for sliding the said cone between said levers to release the same.

WILLIAM B. MAHERN.
HENRY G. GOSSELIN.