June 5, 1934.

W. C. LIEBLER

1,961,501

PNEUMATIC HOIST

Filed June 5, 1933

2 Sheets-Sheet 1

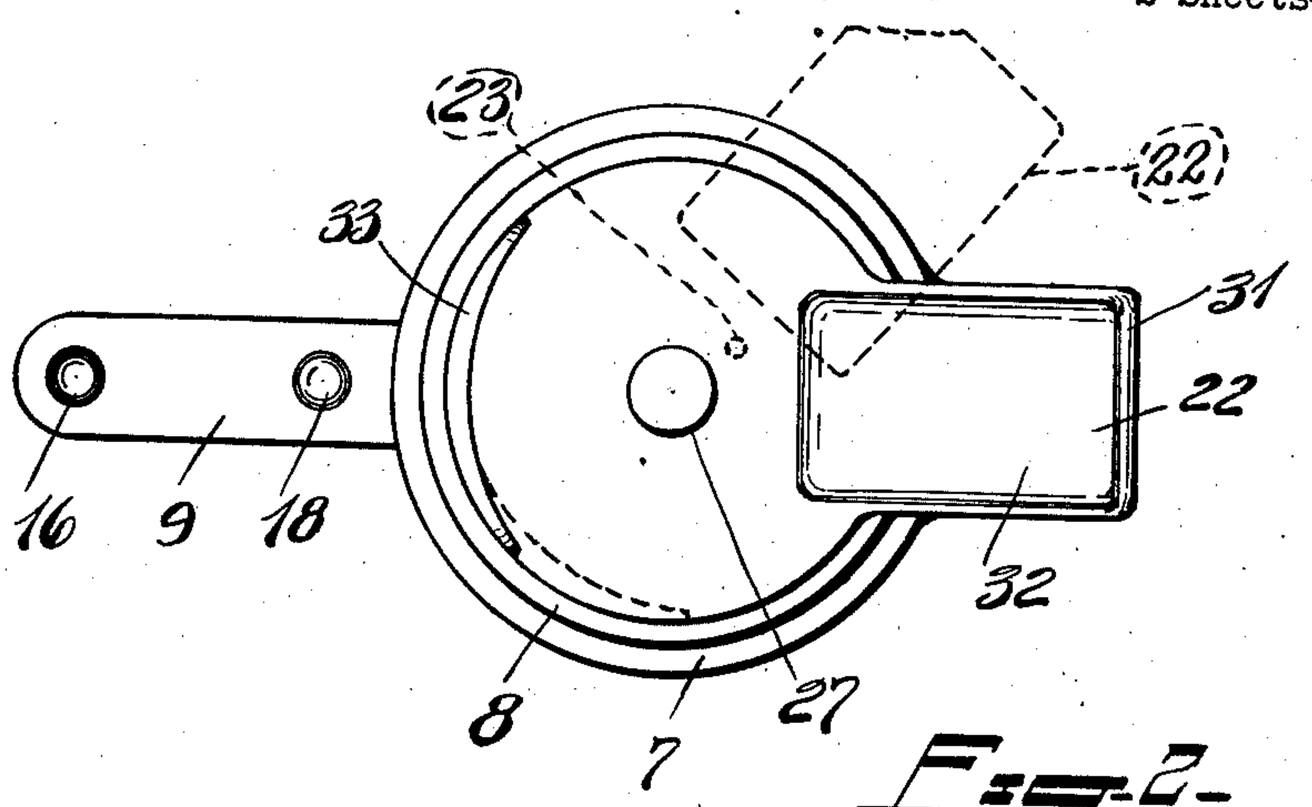

Fig. 2.

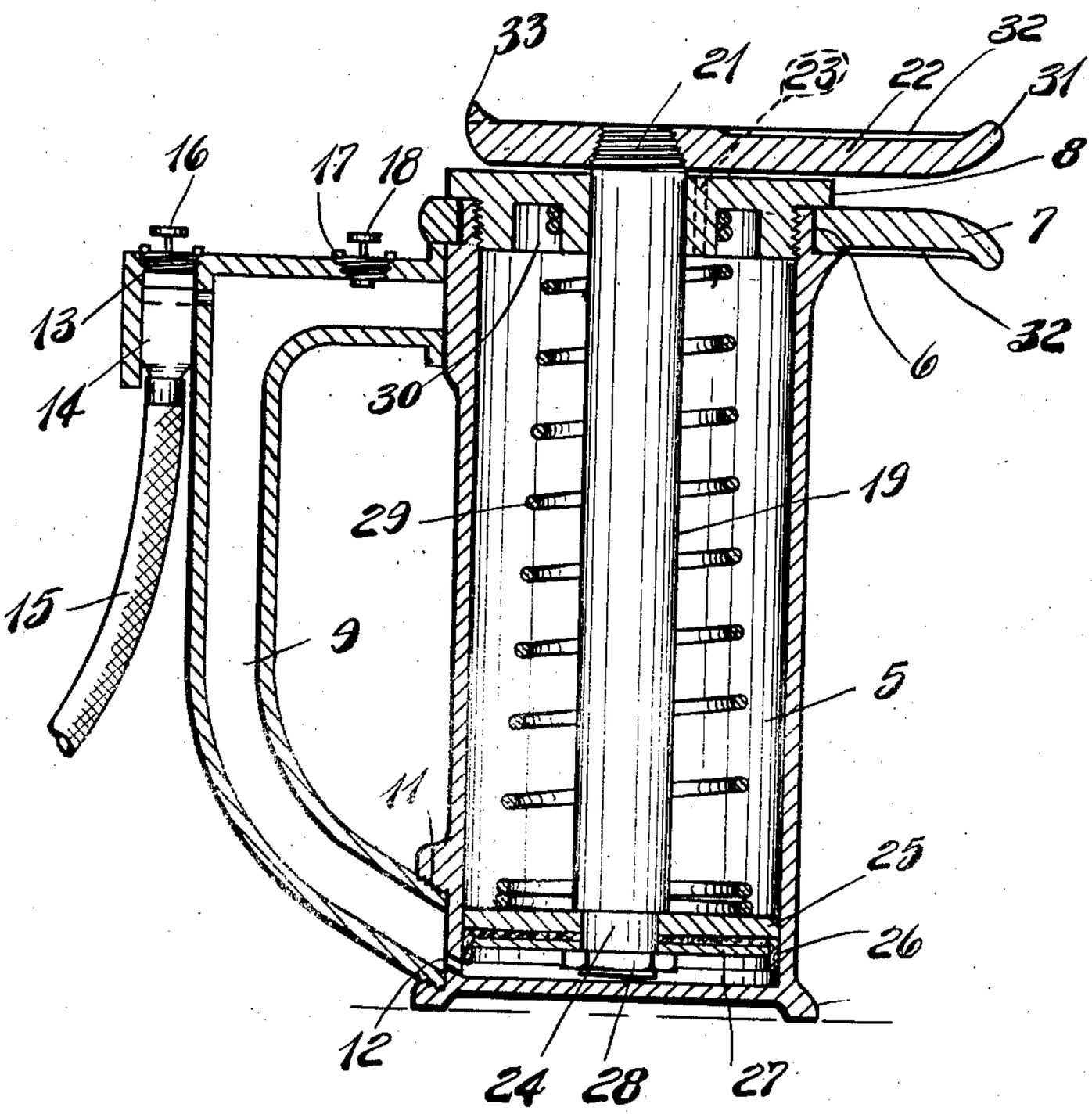

Fig. 1.

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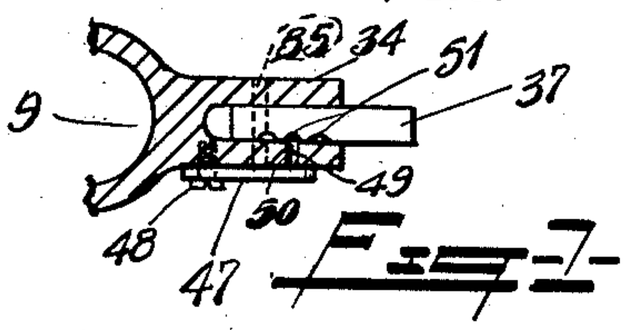

Fig. 7.

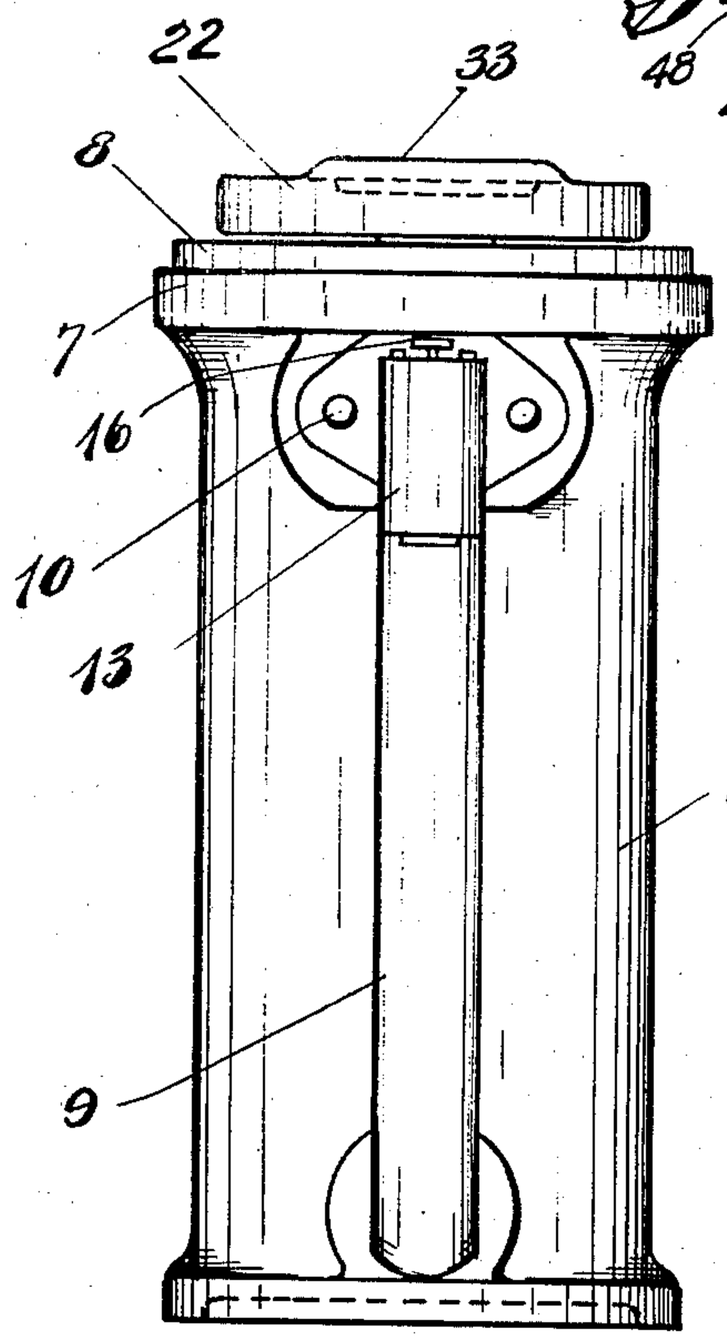

Fig. 3.

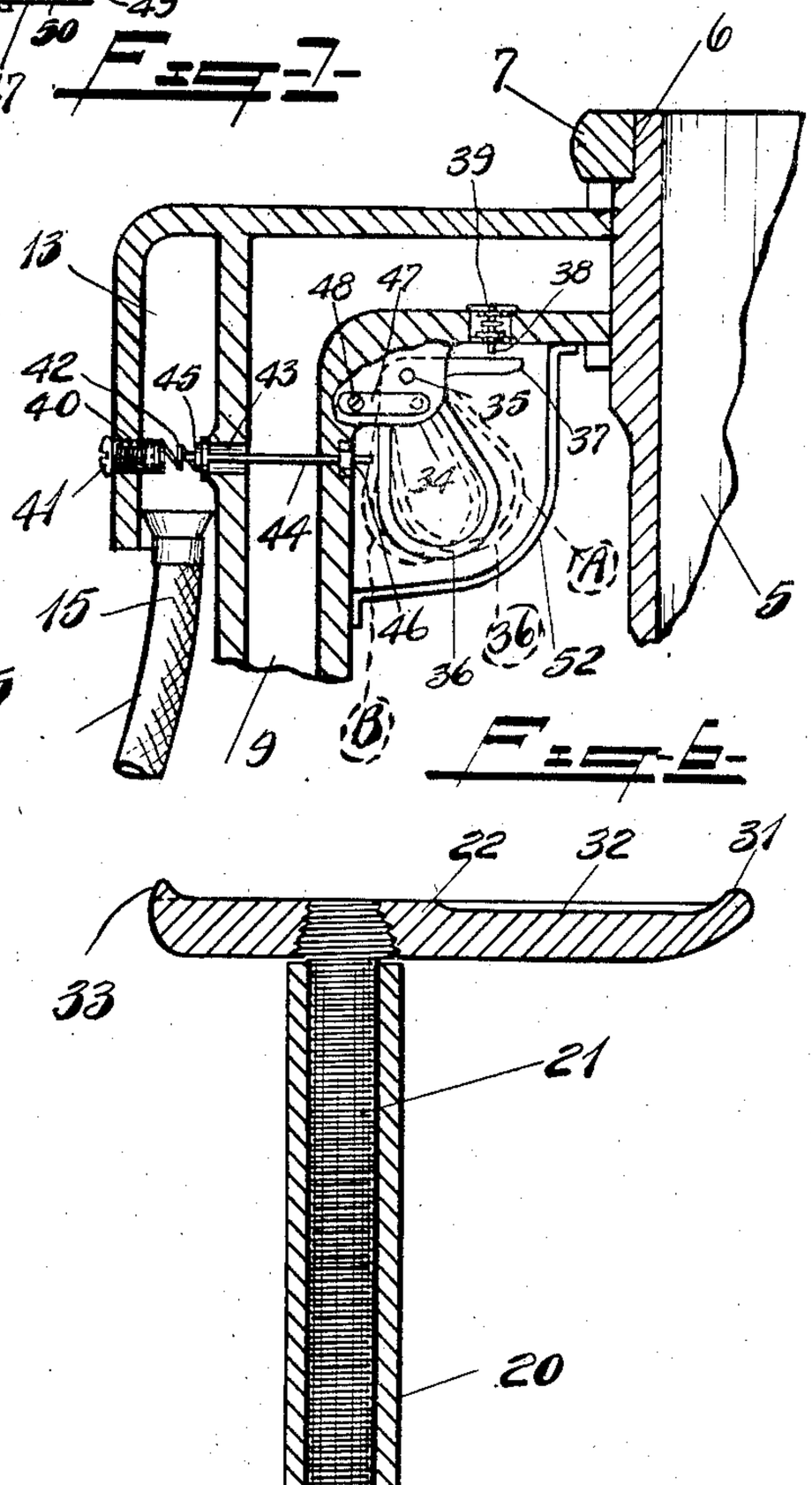

Fig. 6.

Fig. 5.

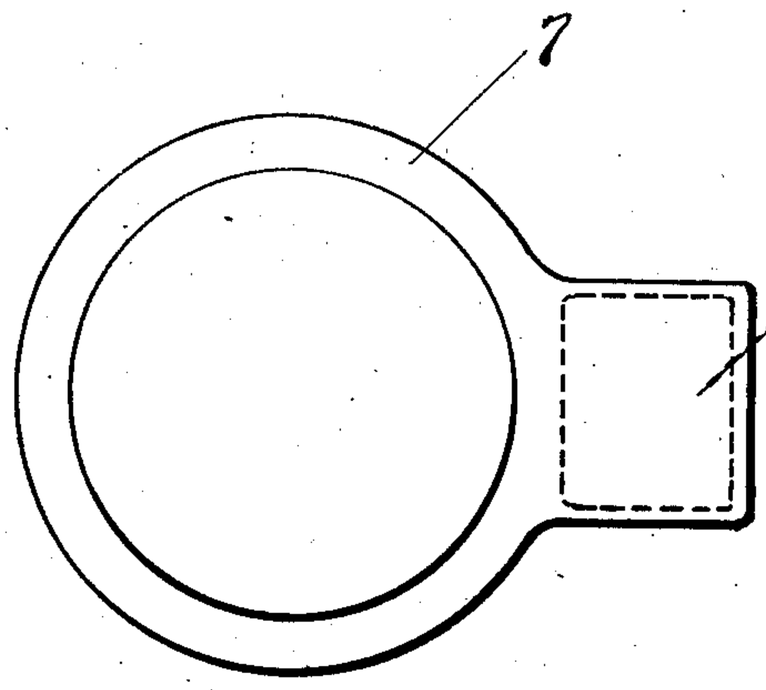

Fig. 4.

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PNEUMATIC HOIST

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Application June 5, 1933, Serial No. 674,367

9 Claims. (Cl. 254—93)

This invention relates to pneumatic hoists, and more particularly to a readily portable hoist of compact construction, which is speedy in operation, very light in weight, and which readily lends itself to general service in a garage or automobile service station where vehicles are greased, repaired, and overhauled.

One of the prime objects of the invention is to provide a very simple, practical, and inexpensive trigger controlled hoist, which can be readily connected to a compressor tank, pump, or source of compressed air supply, and which can be utilized for any purpose for which a "jack" or other loadlifting device is at present used, so that the raising or lowering operation can be quickly accomplished.

Another object is to provide a pneumatic hoist which is adaptable for use in tire and tire repair shops for spreading large stiff casings, closing split rims, or for raising wheels from floor to permit removal of the tires.

A further object is to provide a hoist provided with conveniently located air intake and exhaust valves so that it can be readily connected to a suitable source of air supply, and which can be easily operated by the hand in which the hoist is held, so that the other hand may be free for any other purpose.

A further object still is to design a hoist mechanism provided with an adjustable piston rod and head, so that the head may be adjusted to suit work of a different size or nature.

With the above and other objects in view, the present invention consists in the combination and arrangement of parts, hereinafter more fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes may be made in the form, size, proportion, and minor details of construction, without departing from the spirit, or sacrificing any of the advantages of the invention.

In the drawings—

Fig. 1 is a vertical sectional view of my pneumatic hoist.

Fig. 2 is a top plan view, the broken lines showing the jaw swung to adjusted position.

Fig. 3 is a view from the left side of Fig. 1.

Fig. 4 is a detail of one of the jaws.

Fig. 5 is a part sectional detail of the piston rod and jaw.

Fig. 6 is an enlarged fragmentary sectional view showing a slightly different air control arrangement.

Fig. 7 is an enlarged sectional detail of the trigger locking mechanism.

The hoist as designed is particularly useful in greasing automobiles where it is necessary to remove the load weight off each high pressure unit as it is being lubricated, so that the grease can be forced through, the hoist being compact, light in weight, and readily portable, can be quickly placed in position on an automobile axle, against the frame, or interposed in many other positions to remove the weight so that all parts may be freely and thoroughly lubricated, the operator's hands being free to perform the required operation.

Referring now more specifically to the drawings, the numeral 5 indicates a hollow cylindrical container formed with an open upper end which is shouldered as shown at 6 and on which a jaw member 7 is revolubly mounted, this upper end being interiorly threaded to receive a threaded cap member 8 which forms a closure for the container.

A pipe or conduit 9 is secured to the side wall of the container by means of bolts or rivets 10, and serves as a handle for carrying and placing the device, the lower end of the pipe being threaded and is adapted to engage a threaded opening 11 provided in the side wall, a port 12 opening into and communicating with the interior of the cylinder.

An extension 13 is formed on the upper end of the pipe member 9, and an intake valve 14 is mounted therein, a conventional air hose 15 being connected to said valve, said hose leading to a pressure tank or system (not shown), so that an adequate supply of air is provided. A valve 16 is provided in the horizontally disposed section of the pipe directly above said intake valve, and is adapted to control the admission of air, a similar valve 17 being provided directly adjacent thereto and is formed with a plunger 18, so that it is readily thumb controlled to permit the air to be exhausted, these valves being of conventional design, and it is not deemed necessary to describe them in detail as their specific construction forms no part of the present invention.

The head 8 is centrally bored, and a piston rod 19 is slidably mounted therein, said rod comprising a hollow sleeve member 20 in which a threaded rod 21 is adjustably mounted, the upper end of said rod being shouldered, and a jaw member 22 is threaded thereon, and it will be obvious that the rod 21 may be adjusted on the sleeve 20 to suit the nature of the work, a vent 23 being provided in the head to permit the air above the

piston to be exhausted when the piston raises. The lower end of the rod is shouldered as at 24, and a piston head 25 is mounted on said shouldered section, a packing leather or disc 26 being interposed between the head and a retainer disc 27, these members being held in assembled relation by means of a nut 28 as usual.

A compression spring member 29 is interposed between the upper end of the cylinder and the piston, and serves to force the piston back to original position after the air has been exhausted, the member 8 being grooved as at 30 to form a seat for the upper end of the spring.

The jaws can be of any desired design, and in the present instance I have shown a raised lip 31 on the outer end thereof, with a depressed area 32 directly adjacent thereto so that the jaws readily engage the work, a rib 33 being provided on the opposite end of said jaw. The hoist can be used in cramped and hard-to-get-at places, it leaves the operator's hands free for the greasing or other operation, the jaws are fully revolving and can be adjusted to suit the job, and by inverting the hoist a load can be raised, if only one or two inches off the floor.

In Fig. 6 of the drawings I have shown a conventional trigger control for controlling the air intake and exhaust, spaced apart lugs 34 being provided on the pipe 9, and a transversely disposed pin 35 is mounted therein, a trigger member 36 being pivotally mounted on said pin and is formed with an outwardly projecting leg 37, which when in predetermined position as shown in dotted lines at "A" in Fig. 6 is adapted to engage and actuate the stem 38 of the exhaust valve 39.

A valve mechanism 40 is provided in the extension 13 and includes a hollow plug 41 which serves to seat one end of a spring member 42, an opening or port 43 being provided in the pipe 9, and a valve stem 44 projects therethrough, a collar 45 being provided on said stem, and one end of the spring 42 bears thereon, said collar normally sealing said opening. The opposite end of the stem 44 projects through the inner wall of the pipe 9, and a packing nut 46 forms a leak-proof structure, the end of the stem lying in close proximity to the trigger so that as it is forced back to position as shown in dotted lines at "B" in Fig. 6, the port 43 will be opened to admit air to the container, the solid lines showing the trigger in neutral position.

The trigger is held in its various adjusted positions by means of a spring clip 47 which is secured in position by means of a screw 48, said clip being slightly bowed, and a pin 49 is provided on the one end thereof, said pin projecting through a suitable opening 50 provided in one of the lugs 34 and engaging the grooved surface 51 of the trigger member so that the trigger is held in its various adjusted positions.

A guard 52 is provided as usual and serves to shield the trigger against accidental movement when the hoist is used in cluttered quarters.

The device is adaptable for a great many uses, as it is light in weight, the speed of operation can be regulated to suit the work, its manipulation requires a minimum of exertion by the operator, and the jaws are fully revolving so that they may be swung.

From the foregoing description it will be obvious that I have perfected a simple, practical, efficient, and economical hoist for general utility purposes.

What I claim is:

1. A pneumatic hoist comprising a closed cylinder provided with a laterally projecting jaw, a piston assembly mounted in said cylinder and having a laterally projecting companion jaw adjustably mounted thereon, an air conduit opening into said cylinder and connected to a suitable air supply, and valves for controlling the air taken into and exhausted from the cylinder.

2. A pneumatic hoist comprising a closed cylinder having a laterally projecting vertically fixed jaw revolubly mounted thereon, a piston assembly mounted in said cylinder and having a laterally projecting revoluble companion jaw adjustably mounted thereon, an air conduit opening into said cylinder and connected to a suitable air supply, and valves for controlling the air taken into and exhausted from the cylinder.

3. A pneumatic hoist comprising a cylinder provided with a revoluble jaw projecting beyond the side wall of the cylinder, a piston assembly mounted in said cylinder and having a companion jaw thereon and also projecting beyond the cylinder, an air conduit opening into said cylinder and forming a handle for said hoist and adapted to be connected to a source of air supply, and valves for controlling the air taken into and exhausted from the cylinder.

4. A pneumatic hoist comprising a closed cylinder, a laterally projecting jaw detachably and revolubly mounted thereon and formed with a downward curved outer end, a spring retracted piston assembly mounted in said cylinder and having a laterally projecting companion jaw adjustably and revolubly mounted on the end thereof and formed with an upwardly curved outer end, an air conduit forming a handle for the hoist, and communicating said cylinder and with a source of air supply, and valves for controlling the admission to and the exhaust of air from the cylinder.

5. A pneumatic hoist comprising a cylinder provided with a laterally projecting revoluble jaw, a spring retracted piston slidably mounted in the cylinder and having a laterally projecting revoluble companion jaw on the upper end thereof, and a piston head on the opposite end, an air conduit connected to and communicating with said cylinder and with a source of air supply, and means for controlling the air taken into or exhausted from said cylinder.

6. A pneumatic hoist comprising a cylindrical container, a laterally projecting jaw mounted on the upper end thereof, a cap forming a closure for said container and adapted to secure said jaw in position, a piston assembly mounted in the container, a laterally projecting companion jaw mounted on the upper end thereof, an air conduit secured to the side wall of the cylinder, one end communicating with the interior thereof, the opposite end being connected to a source of air supply, and valves for controlling the admission to and exhaust of air to said container.

7. A pneumatic hoist comprising a cylinder having a laterally projecting jaw, a spring retracted piston assembly slidably mounted therein and having a similar laterally projecting companion jaw on the upper end thereof, means for admitting air to and exhausting air from said cylinder, and a trigger controlling said intake and exhaust operation.

8. A pneumatic hoist comprising a cylinder having a laterally projecting overhanging jaw revolubly mounted thereon, a spring retracted piston assembly slidably mounted therein and

having a laterally projecting overhanging companion jaw adjustably and revolubly mounted thereon, means for admitting air to and exhausting air from said cylinder, and a trigger control adapted in certain predetermined positions to actuate said means to admit air to and exhaust air from said cylinder.

9. A pneumatic hoist comprising a container having a piston assembly slidably mounted therein, a vertically stationary revoluble jaw on the container, a vertically adjustable jaw on the piston assembly, an air conduit connected to said container and to a source of air supply, and a trigger control adapted in certain predetermined positions to admit air, lock air in, or exhaust air from said container.

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