

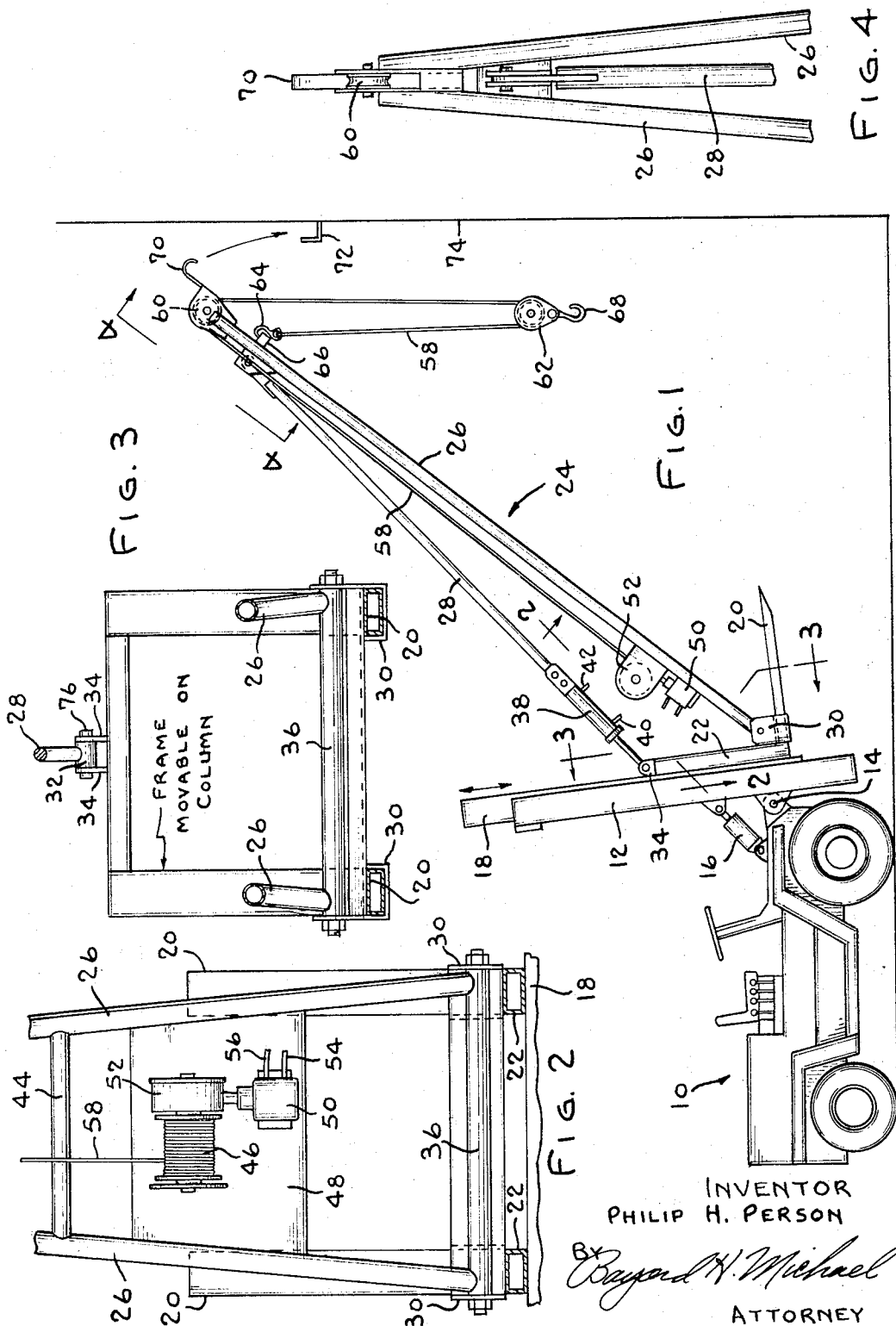
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CRANE

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This invention relates to a crane which can be attached
to a fork truck to provide a highly useful mobile crane
unit.

The principal object of this invention is to provide a
simple, versatile crane attachment for fork trucks.

Another object is to provide a crane construction per-
mitting simple mounting on and removal from a fork
truck.

These objects are realized in the illustrated construc-
tion in which a simple boom can be attached to a fork
truck by running the forks into stirrups carried on the
ends of the compression members of the boom and at-
taching the tension member of the boom of the fork truck.
The crane can be raised and lowered by the usual expe-
dient used to raise and lower the fork. The tension mem-
ber is preferably adjustable and this factor coupled with
the ability to raise and lower the crane results in mount-
ing the hoist drum on the compression members so
changes in position of the hook (load) relative to the
boom are not compounded on movement of the boom
as would be the case if the hoist drum was on the truck.
The hoist is preferably hydraulically driven with the hy-
draulic source being the source on the truck. The prob-
lem of removing the crane from the truck has been solved
by providing a hook on the end of the boom to allow the
hook to be engaged on a suitable hook, etc. on a wall,
post or the like so the fork may be backed away from
the crane while the crane is so restrained. The crane
can then be stored with the end so hooked and is ready
for mounting at any time.

Other objects and advantages will be pointed out in,
or be apparent from, the specification and claims, as will
obvious modifications of the single embodiment shown
in the drawings, in which:

FIG. 1 is a side elevation of the crane mounted on
a fork truck and shows the hook on the wall for remov-
al and storage;

FIG. 2 is a fragmentary view taken as indicated by
line 2—2 in FIG. 1;

FIG. 3 is a fragmentary view from line 3—3 in FIG.
1 (it should be noted that neither FIGS. 2 nor 3 attempts
to show great detail of the fork truck mechanism); and
FIG. 4 is a view taken on line 4—4 of FIG. 1.

The fork truck in the drawings is shown for illustrative
purposes and the various types of construction of fork
trucks currently employed can be used with this type of
crane. Here the vehicle 10 is provided with a relatively
fixed forward column 12 which is pivotally mounted on
the vehicle at 14 so that the angle of the column with re-
spect to the vehicle can be varied by adjusting the hy-
draulic ram 16. Movable column 18 is slidably mounted
on the fixed column 12 and is actuated by means of a
hydraulic ram, not shown. The movable column is also
provided with a chain or cable arrangement which, in
turn, connects to the fork assembly including the for-
wardly projecting forks 20 and the back portion 22.
Therefore, as the sliding column 18 is elevated by the
hydraulic ram the fork assembly is elevated both with
respect to the sliding column 18 and the fixed column 12.
The details of this type of construction form no part of
the present invention.

Crane assembly or boom 24 which includes compres-
sion members 26, 26 pivotally connected to the tension
member 28 at the free end of the boom can be mounted

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on the fork truck through the provision of the articulated
stirrups 30 carried at the lower ends of each of the two
compression members 26 while the tension member is
provided with a suitable boss 32 permitting the tension
member to be pinned to the upstanding ears 34, 34 pro-
vided on the back 22 of the fork assembly. The stirrups
30 are designed to slide over the forks and seat against
or such. It will be noted the two compression mem-
bers 26, 26 will hold the stirrups in place without pins
or such. It will be noted that two compression mem-
bers preferably terminate at the cross tube 36 through
which a long bolt is passed to permit pivotal action of
the compression members with respect to the stirrup and
the fork truck. The tension member is provided with a
hydraulic ram assembly 38 with suitable hoses 40, 42
running back to the fork truck and controllable there-
from, as for example, by means of one of the control
levers situated next to the driver's seat. This permits
adjusting the length of the tension member and, there-
fore, adjusting the angle of the boom with respect to
the fork truck. It will be appreciated that this feature
could be omitted and some degree of adjustment could
be obtained by providing an adjustable pin and telescop-
ing tube arrangement on the tension member or in some
cases a fixed length boom will be quite satisfactory for
the intended use. The compression members 26, 26 are,
of course, provided with suitable cross braces 44 to
properly strengthen the boom assembly.

The cable or hoist drums 46 is mounted on the platform
48 carried by the compression members and is driven
by the hydraulic motor 50 through a suitable gearing in
housing 52. The hydraulic motor is provided with suit-
able hose connections 54, 56 which are connected to
the hydraulic mechanism on the fork truck for control
of the motor from the fork truck. The cable 58 is reeved
over a pulley 60 on the outboard end of the boom and
then runs down through block 62 and terminates at the
hook 64 which can be hung on a suitable eyelet 66.
The block 62 is provided with a hook 68 and this ar-
rangement is for a double line hoisting of a load on the
hook. If for some reason a single line operation is de-
sired, the block 62 can be removed and a hook 64 can
be employed.

The plates on either side of the sheave 60 serves to
support the hook 70 at the extreme outward end of the
boom. This hook is designed to facilitate removal of
the unit from the fork truck. For example, when the
crane is not needed the hook 70 is lowered to engage a
suitable hook or other device 72 on the wall of the build-
ing or the like 74 and tension member 28 is disconnected
from the fork truck by removal of the pin 76. The fork
truck now can be backed away from the crane which
will be held by reason of the hook 70 engaging the hook
on the wall. Of course, the stirrups merely slide off the
forks. The crane or boom can now be left stored against
the building ready for future use. When the unit is to
be placed into use the forks are aligned with the stirrups
and the fork truck is advanced until the stirrups are
against the back member 22. Then the tension member
is connected whereupon the hook 70 can be disengaged
from hook 72 and the crane is ready for operation. Of
course, the hydraulic ram on the tension member and
the hydraulic hoist motor will have to be connected
through suitable hydraulic connections.

The provision of the hook on the free end of the crane
makes this unit most versatile and easy to place into
operation or to remove from the fork truck. Without
such provision the general problem of handling the unit
to mount it or dismount it becomes rather cumbersome.

A fork truck provided with a crane of this type is a
very versatile piece of equipment in that the crane can
be elevated by the usual elevating mechanism of the fork

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truck and the angle of the entire fork assembly including the crane can be changed as well as providing for changing the boom angle by adjusting the length of the tension member. The net effect is to provide a crane which in many respects is more versatile than specialized small crane units. The present arrangement can be provided at relatively low cost making it possible for persons having need for a crane only occasionally to have the benefit of a crane without a great investment.

Although but a single embodiment of the present invention has been illustrated and described, it will be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the spirit of the invention or from the scope of the appended claims.

I claim:

1. A detachable crane for fork trucks or the like, comprising, a boom including tension and compression members provided with means for attaching the boom to a fork truck, a sheave at the free end of the boom, a hoist drum mounted on one of said members, a cable reeved from the drum over the sheave, first hook means attached

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to said cable and second rigidly mounted hook means on the free end of the boom, vertically disposed means for engaging said second hook means whereby the crane can be restrained while the fork truck is backed away to thereby facilitate removal of the crane from the fork truck.

2. A crane according to claim 1 in which the hoist drum includes a hydraulic motor for the drum.

3. A crane according to claim 2 in which the tension member includes hydraulic means for altering the length of the tension member.

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