TN-66-43
L. R. Lucas
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DUMP WINDOW REMOVAL UNIT INSTRUCTIONS

GENERAL:

The original concept of operation was to have all hydraulic motions proceed to the end of the stroke and to have no interlocks. A vacuum flange at A-beam dump could not be moved up-beam, so we have some limitation to this philosophy; also the window way and impact wrench cradle do not clear in all positions.

The hydraulic pressure relief valve is set at 400 psi to minimize damage should an interference occur; but there still is enough force to damage parts. This also is the minimum pressure that will lift the impact wrench cradle.

The air relief valve is set for 55 psig. If air pressure is set below this, the impact wrench will not start every time under no load. The impact wrench should have one ounce of "Marvel Mystery Oil" poured into the air inlet each day of use or it may not start. (see fig. 1) Reservoir should be half full of SAE #30 oil (plug should be on horizontal).

An air pressure of 55 psi is ideal. A 30 second burst of air will impact the knife edge into the window about 0.025" (only 0.020" required for vac seal); and a 3 minute burst will give only 0.030" penetration. Therefore the impact tightening is almost insensitive to time. In the loosening of the window, extra impacting jams the main nut against stop nuts at the end of the stud; and in turn tends to join the left-hand threads at the bottom of the stud into further engagement in the dump. Excessive impacting in this direction is not desirable but is not damaging.

The entire operation, window removal and re-insertion can probably be done blind, but a TV monitor capable of seeing all operations adds considerable assurance. However, any damage would no doubt be damage to the removable unit and would be repairable.

CAUTIONS:

Before installing unit in tracks, window arm and window way must be fully retracted, and the impact wrench carriage must be retracted and down to clear all obstructions.

Window way and impact wrench cradle do not clear in all positions. (See fig. 2) Window way (# 2 switch) must be extended first and retracted last --- there are no protective interlocks, so be careful!

Splined plug on end of impact wrench must turn freely or it cannot be inserted into nut. (See fig. 5) Plug rotates one tooth or less as it enters nut.

Window arm will not clear spring on vacuum pipe joint with window way fully retracted. Also, for window removal, obviously the window arm must be extended well before the window way is fully extended so the pin spears the window slot. Reversal of this sequence will bend the pin against the outside of the window frame. Window arm and window way shown fully extended in fig. 3.

Another limitation exists between the impact wrench cradle and the beam pipe vacuum flange. Obviously the splined plug must be removed from the nut socket before lowering the cradle assembly; but if it is retracted too far the cradle will hang up on the vacuum flange. The safe zone is short enough that an indicating light was thought necessary. The sequence of operation is then to extend the impact wrench carriage until the light comes on; lift up the impact wrench; and then complete the extension of the carriage to engage the splined plug in the nut. For withdrawal the sequence is reversed. Notice that the carriage is never raised or lowered unless the telltale light is on.

OPERATION CHECK LIST:

I. PRELIMINARY

A. Connect to electrical power (110V) and air (90 psig). At the A-beam dump the air is in the chase on the south wall, and the electric outlet is on the wall near the chase. At East dump, the air is outside the entrance on the left (north) side. Electric power outlets are on the south wall above the shielding.

B. Pick up with crane. Use eye shown for East dump (fig. 4) and other eye for A-dump.

C. Place one ounce of "Marvel Mystery Oil" in air intake (fig. 1). Turn on air and run through impact wrench.

D. Check reservoir oil level. Add SAE #30 oil as needed.

E. Determine that splined plug turns freely (fig. 5).

II. WINDOW REMOVAL

A. All units must be retracted and the impact wrench cradle must be down. Control plunger on impact wrench must be up (fig. 6).

B. Set window removal unit into rails (fig. 7). For A-dump thread cart onto top end of rails; East dump insert from side as shown.

C. With removal unit still on crane but resting on stops, proceed with the following sequence (verify all actions with TV monitor):

WINDOW REMOVAL SEQUENCE			
Switch	Direction	Duration	Comments
#2	B, extend	30 sec	Extend window way so window arm clears vacuum flange spring .
#1	B, extend	End of Stroke	Extend window arm.
#2	B, extend	End of Stroke	Extend window way; visually check that arm has speared slot in window.
#3	B, extend	Until Light is On	Extend impact wrench partially.
#4	A, up	End of Stroke	Lift impact wrench in space between vac. flange and nut.
#3	B, extend	End of Stroke	Engage Driver in Nut.
Turn on Air to Impact Wrench (Is Control Button on Wrench Up?)		Until nut spins	Impacting should stop & spinning should start in about 15 sec. Turn off air when nut starts spinning.
#3	A, retract	Until Light is On	Disengage driver from nut.
#4	B, down	End of Stroke	Lower Impact Wrench.
#3	A, retract	End of Stroke	Fully retract impact wrench.
#1	A, retract	End of Stroke	Retract window arm; this pulls window out of dump and into window way.
#2	A, retract	End of Stroke	Retracts window way.

D. All Members are retracted and the unit is ready to be lifted out by the crane.

E. Extend window arm and push old window out into a wooden window way (if radioactive) and dispose.

III. WINDOW INSERTION

A. Insert new window in way with help of retracting window arm.

B. Press control plunger on impact wrench down.

C. Set window removal unit into rails as before.

D. Follow the "Window Insertion Sequence".

WINDOW INSERTION SEQUENCE

Switch	Direction	Duration	Comments
#2	B, extend	End of Stroke	Extends window way.
#1	B, extend	End of Stroke	Extends window arm; CAUTION: Old window must be removed from dump first.
#3	B, extend	Until Light is On	Extend impact carriage partially
#4	A, up	End of Stroke	Lift impact carriage
#3	B, extend	End of Stroke	Engage driver in nut
Turn on Air to Impact Wrench		30 to 40 sec. at 55 psig. Air	Window clamping. (Did you push the impact wrench control button down?)
#3	A, retract	Until Light is On	Disengage Driver from nut
#4	B, down	End of Stroke	Lower impact wrench
#3	A, retract	End of Stroke	Fully retract impact wrench
#2	A, retract	30 sec	Retract window way enough to disengage window arm pin from window slot
#1	A, retract	End of Stroke	Retract window arm
#2	A, retract	End of Stroke	Retract window way

E. All members are now retracted and the unit is ready to be lifted out by the crane.

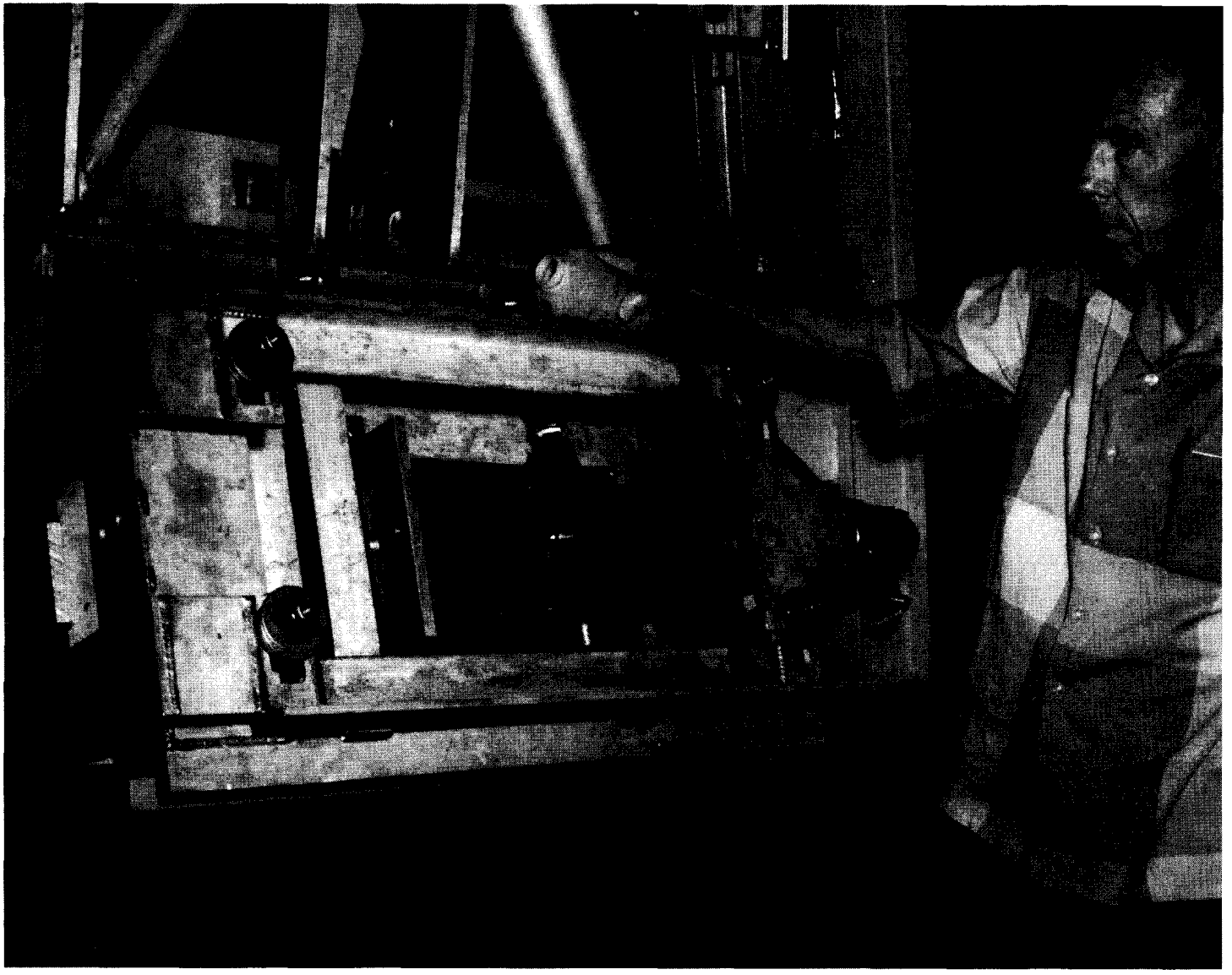

FIG. 1

626-1-A

FIG. 2

626-2-A

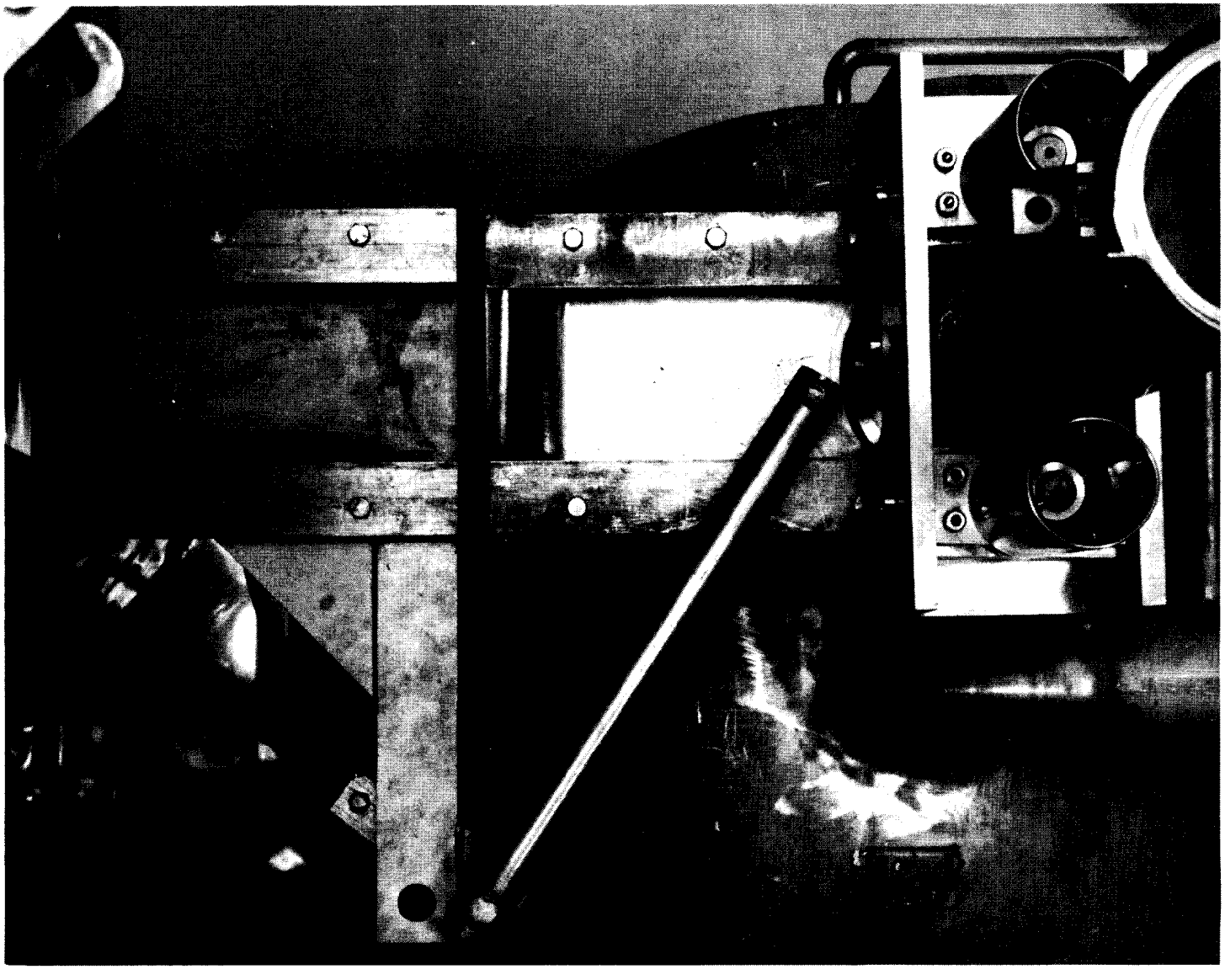

FIG. 3

626-3-A

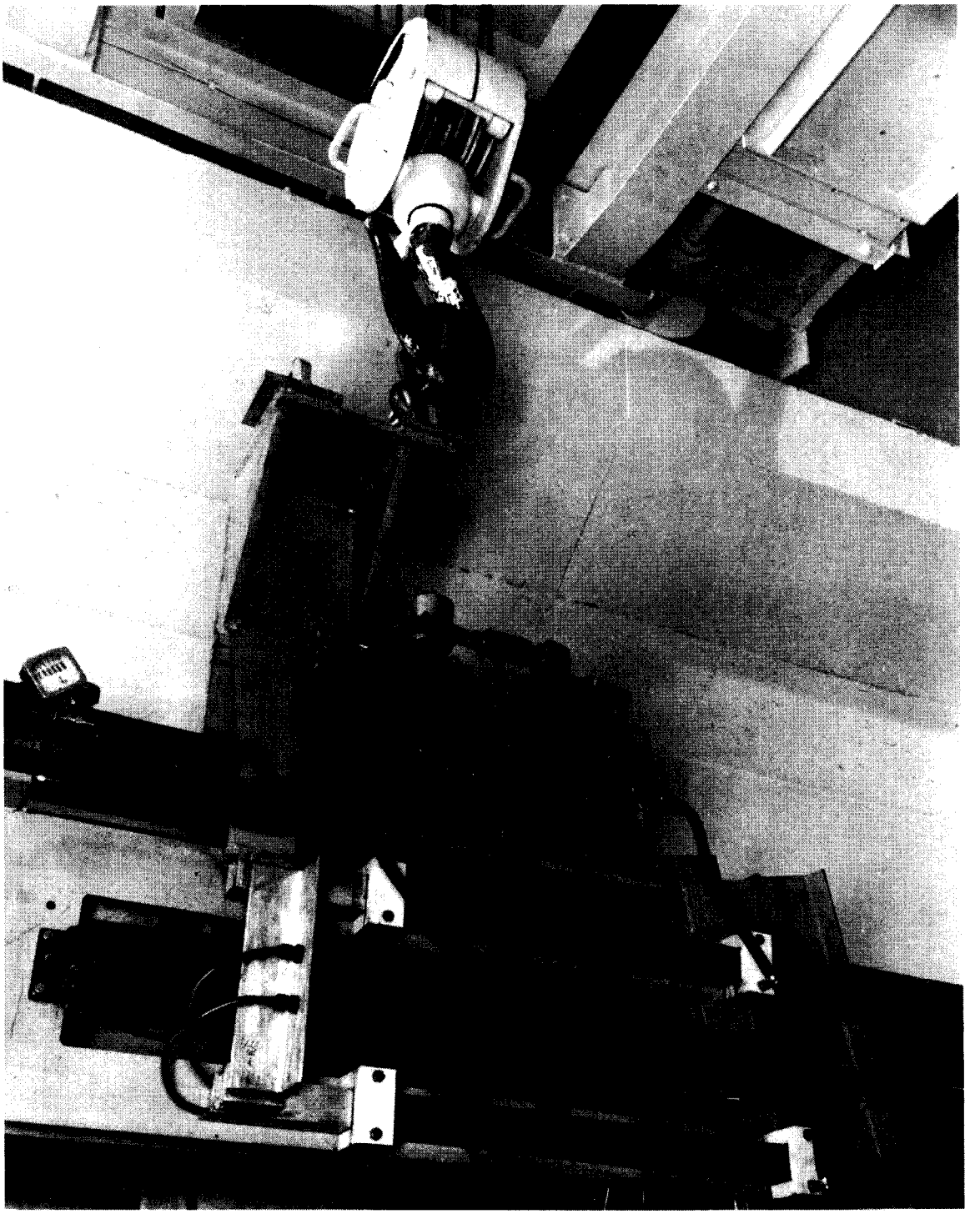

FIG. 4

626-4-A

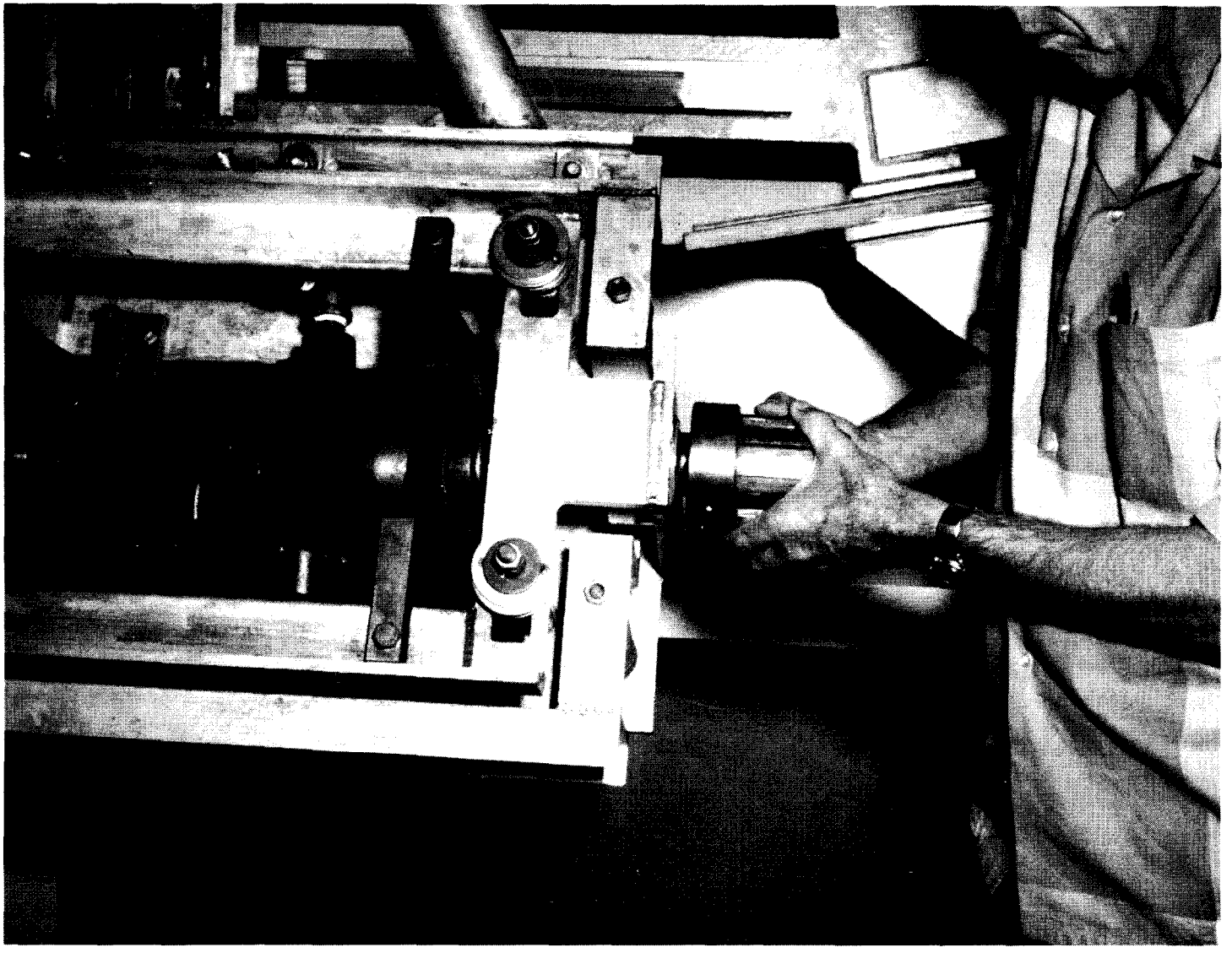

FIG. 5

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FIG. 6

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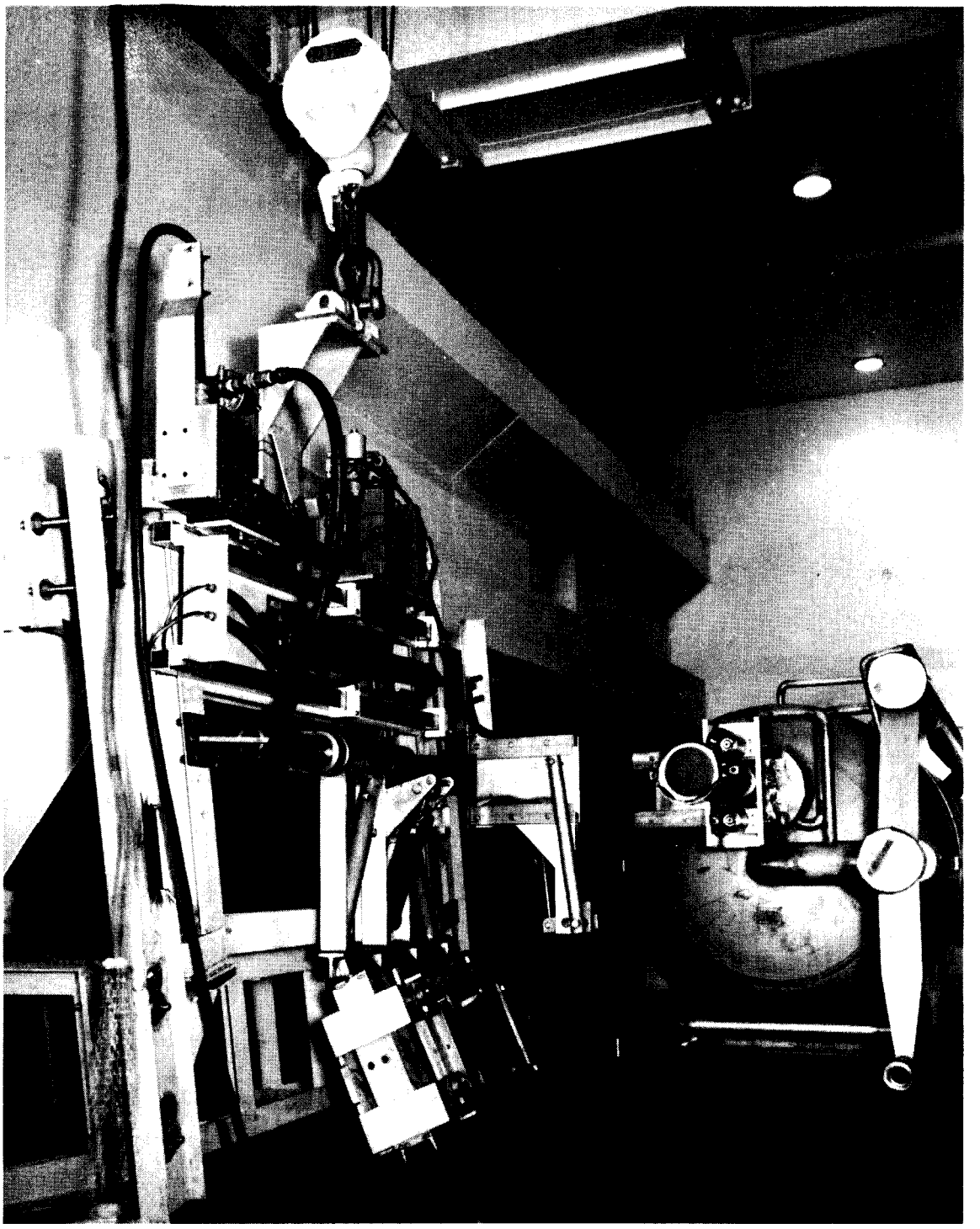

FIG. 7

626-7-A