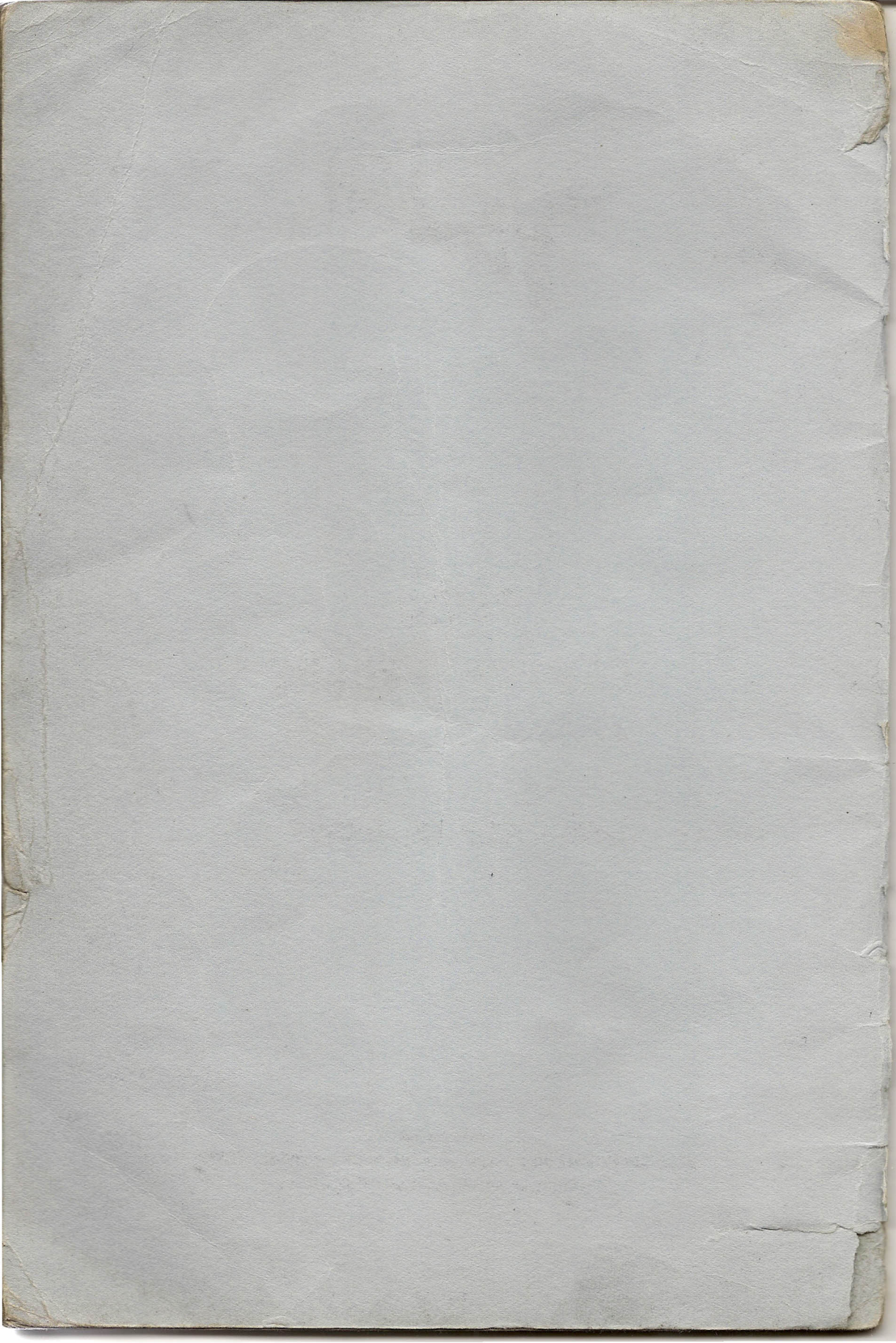


Vinten

**HERON
CAMERA CRANE**

OPERATORS HANDBOOK

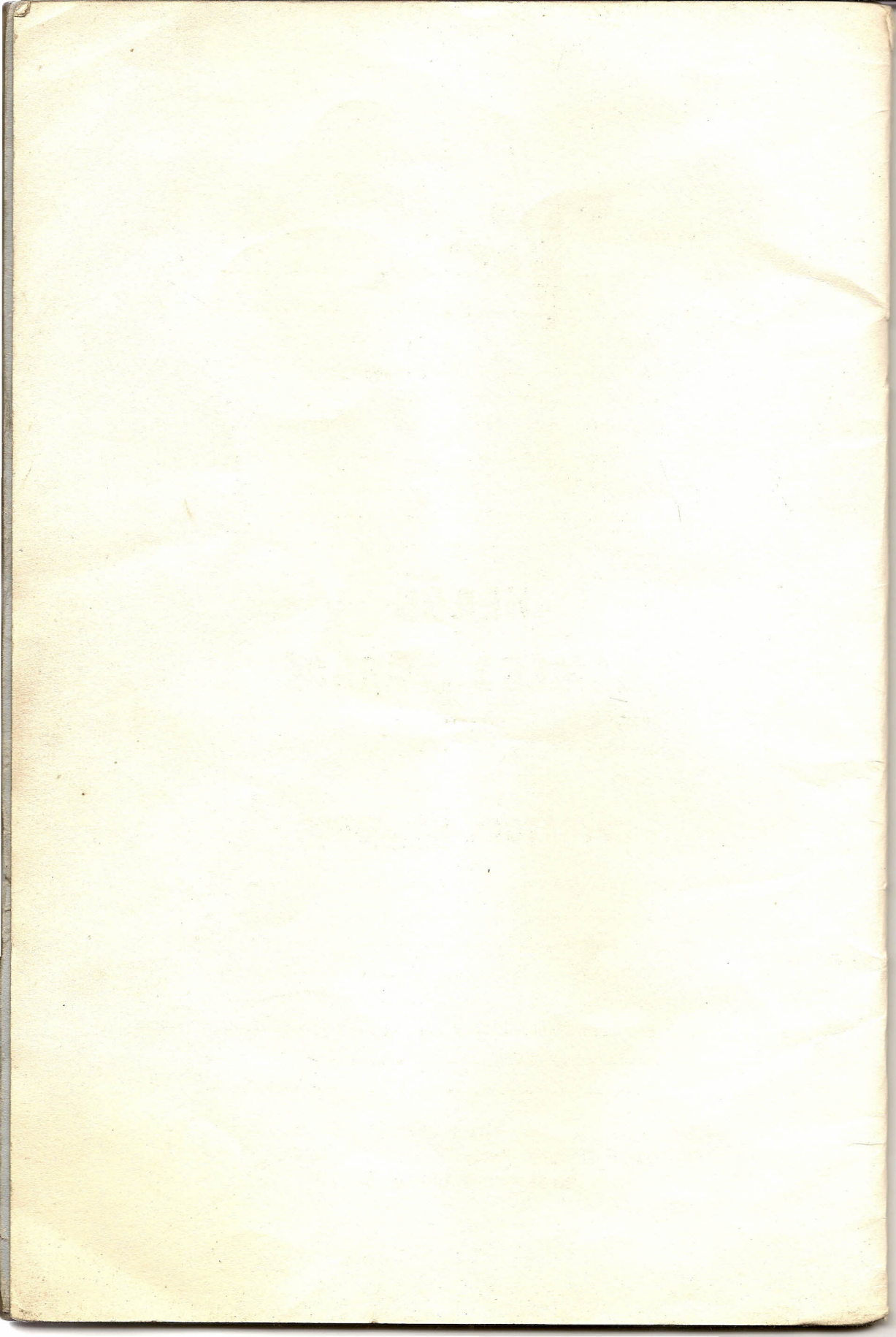


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CAMERA CRANE**

OPERATORS HANDBOOK

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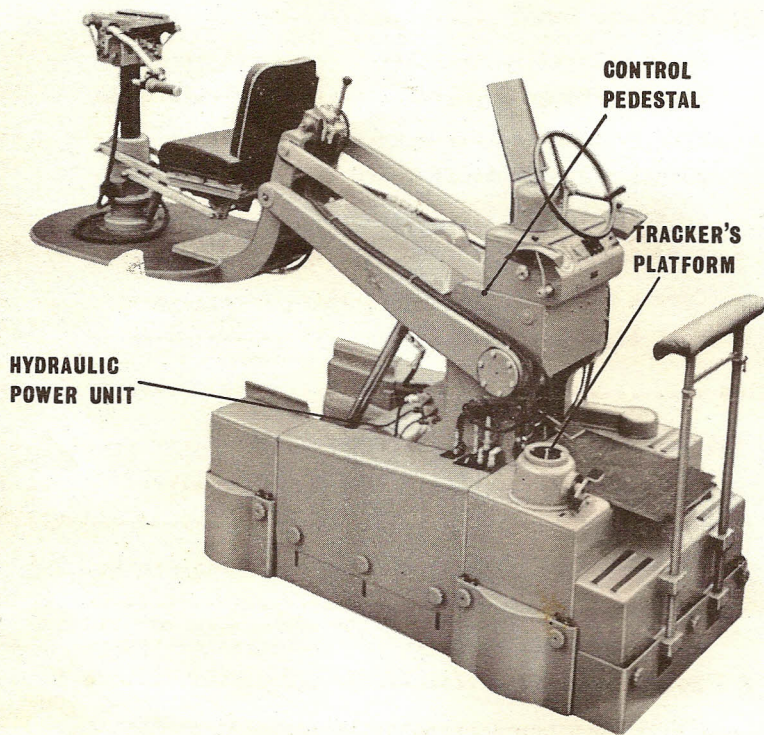
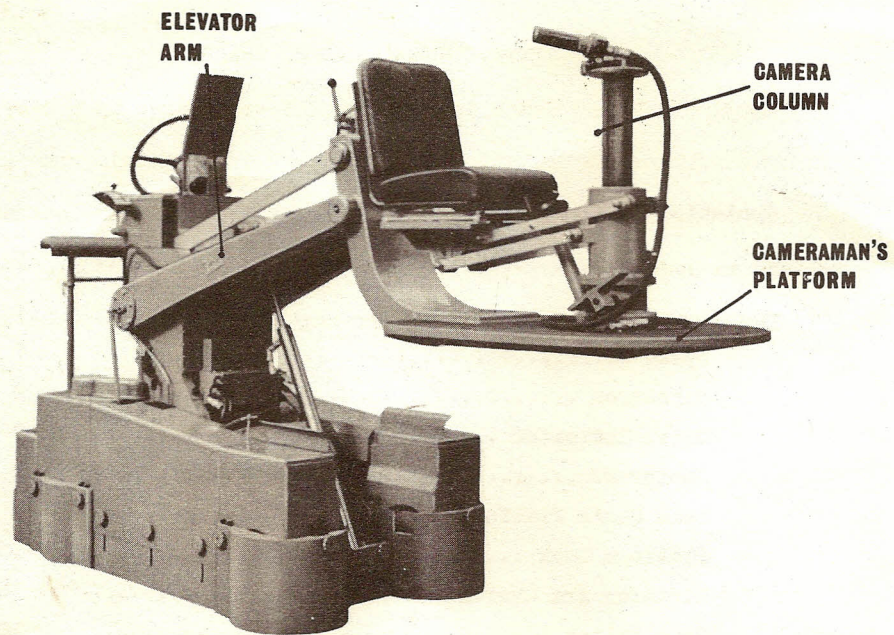


Fig. 1

THE VINTEN 'HERON' CAMERA CRANE

The Heron Camera Crane is designed for studio use by a crew of two men. Its advanced technical features - in particular the use of hydraulic drive for all movements - ensure extreme smoothness and silence in operation.

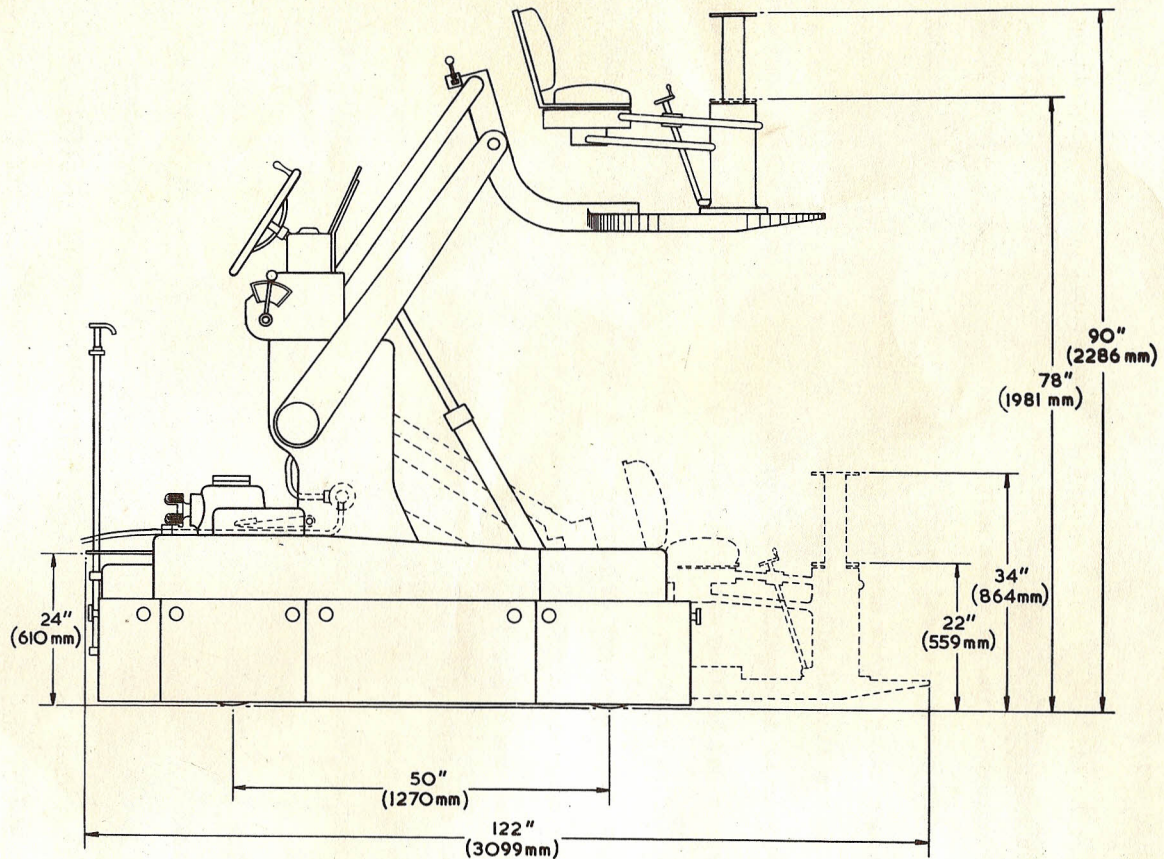
The equipment is based on a truck supported by four wheel units at the corners. Two of these units, diagonally opposite, are driving wheels, the other diagonal pair being used for braking. Accelerating and decelerating forces are thus balanced symmetrically about the truck centre line at all times.

The truck is capable of both crabbing and steering which, together with speed and braking are controlled by the tracking operator riding on a platform at the rear. The camera platform is supported by an elevator arm; movement of the arm in a vertical plane is controlled by the cameraman who also has a control permitting the raising and lowering of the camera support column.

An important design feature is that the cameraman is able to rotate his seat around the platform quite independently of the camera mounting, so that panning movements of the camera are made solely by the use of the pan and tilt head.

The general arrangement of the Heron is shown in Fig. 1 and in the dimension drawing, Fig. 2. The latter also shows the upper and lower limits of movement of the camera platform and of the camera support column. In the latter case the dimensions are referred to the mounting face on the top section of the telescopic column, to which the pan and tilt head would normally be secured.

9



MAXIMUM WIDTH OF TRUCK 36"
(914 mm)

WEIGHT 2260 lbs
(934.4 kgs)

Fig. 2

C O N T R O L S

Fig. 3 shows the controls and indicators at the tracking operator's position.

Steering

The steering wheel A operates in a natural sense, controlling both steering and crabbing. Changeover between the two conditions is effected by depressing pedal B (for steering) or pedal C (for crabbing) fixed to a centre - pivoted bar. The system of chain drives required to give steering or crabbing is then selected by a clutch mechanism, which can be engaged only when the steering wheel and the truck wheels are properly aligned. Thus, depression of the changeover pedals does not necessarily engage the selected condition immediately and it will generally be necessary to turn the steering wheel through the straight ahead position to permit engagement of the clutches.

Speed

The two levers D are mounted on a common cross shaft which operates the speed and direction control valves supplying the propulsion motors. The two control levers enable traction to be controlled from either side, as convenient, and their operation is identical.

Each lever moves over a quadrant plate which defines its arc of travel. A white-painted sector in the centre indicates the region where hydraulic power is not applied to the traction motors so that in this position the truck will coast under its momentum or be stopped by application of the brakes, or by hydraulic braking controlled by lever D.

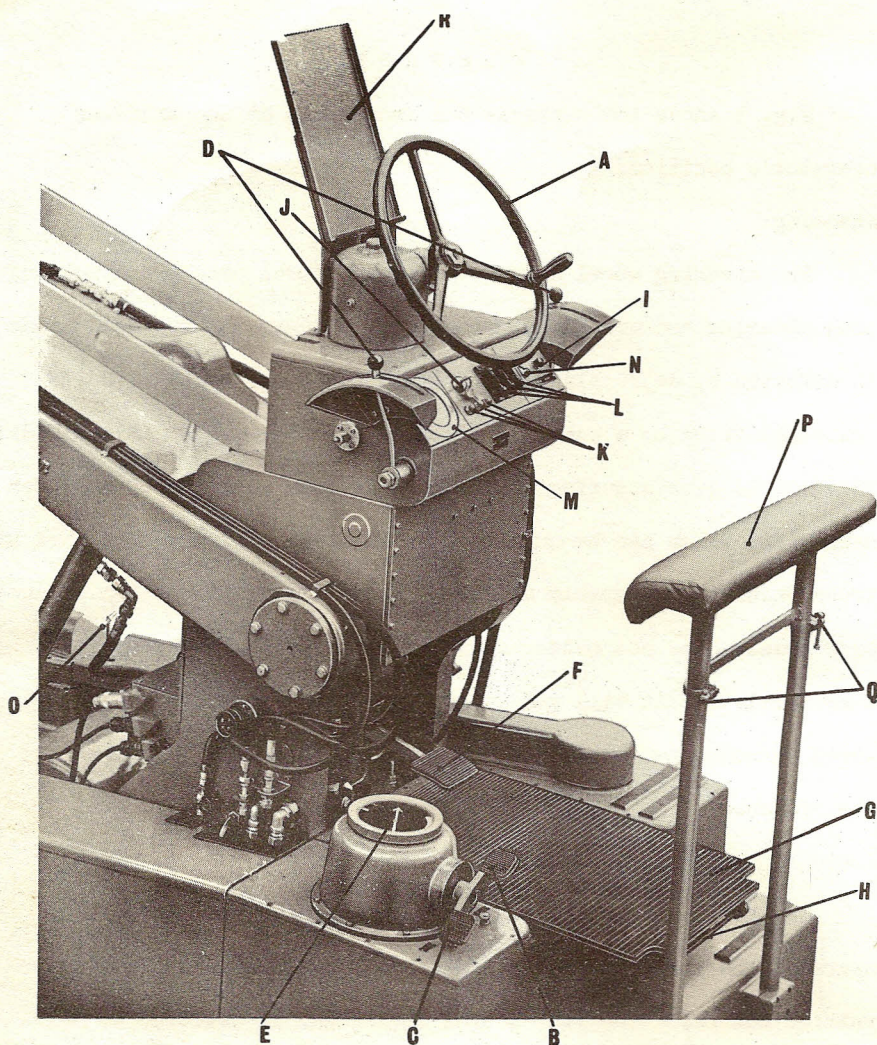


Fig. 3

Movement of a speed control lever away from the central white-painted sector applies power to the propulsion motors giving increased speed as the lever is moved towards the limit. The smoothness of hydraulic drive enables the Heron to be moved at very low speeds; full torque is always available at any speed.

At full speed the Heron travels at about 12 ft./second.

Direction

The speed control levers D also control direction of travel. Normally the truck is arranged so that forward and backward movements of the levers represent forward and reverse traction respectively, with the control levers thus working in a natural sense. The truck support wheels can be crabbed through the full 360° , however, and it is therefore possible for the drive to be in the opposite sense to that indicated by the position of the control levers. As a guide to the tracker, an indicator is fitted showing true direction of drive.

Drive Indicator

This comprises a pointer E which is linked to the steering mechanism and rotates with it to show the true direction of the drive when the speed and control levers D are moved to the forward sector. This is a useful facility when resuming crabbing movement after a long stationary period.

Footbrake

The pivoted pedal F is linked to brake drums on two diagonally opposite wheels. The footbrake operates in a normal sense with a progressive action, and is capable of producing rapid deceleration of the camera crane.

Dead Man's Platform

The operator's platform G is pivoted and can move through a small arc under the operator's weight. In doing so it opens a valve permitting main hydraulic power to be applied to the tracking motors. If the operator's weight is removed from the platform, both

the traction motors are immediately disconnected from their power supply.

Platform Lock

A lock is provided beneath the tracker's platform and comprises a sliding member with a handle H for manual operation. When pushed in (i.e. towards the centre of the track) the Dead Man's Platform operates as described above. When the lock is pulled outwards, the platform is prevented from responding to the weight of the tracking operator, so that the traction motors can not be energised. This provides a safeguard against unauthorised use of the crane when left unattended by the crew.

Elevator Arm Override

The push button I enables the tracking operator to override any movement of the elevator arm applied by the cameraman; this is a useful safeguard whereby the operator can prevent the cameraman (with his more limited field of vision) from initiating or continuing an elevator arm movement which could be dangerous to himself, the camera or surrounding obstructions.

Button I disconnects the elevator arm ram as long as pressure is maintained on it; when released, the button returns under spring pressure and reinstates power on the elevator arm ram.

Main Switch

The key operated switch J connects main power to the motor which drives the hydraulic pump. Removal of the key after use thus prevents unauthorised use of the camera crane (provided the accumulator is exhausted).

Indicator Lamps

The three indicator lamps K are connected to remain alight so

long as power is maintained in the three phases of the supply. Should any one of these lamps be extinguished the camera crane must be withdrawn from service immediately, otherwise serious damage can occur to the pump driving motor.

The lamps are connected between the main supply socket on the Heron and the ignition type switch. They will therefore light up as soon as the trailing power lead is connected, providing the supply is live, whether the switch is turned to 'on' or 'off'.

Fuses

The three fuses L are inserted in the three phases of the supply. The fuses are self indicating, so that a blown fuse is indicated by the illumination of a small integral lamp.

Pressure Gauge

The pressure gauge M indicates pressure in the main hydraulic system. The working of this system is described in detail in the Maintenance Manual, but from the operator's viewpoint the gauge provides a ready check on the correct functioning of the hydraulic system.

The latter includes an accumulator which maintains pressure in the system even when the motor driven pump is not running; the gauge thus always indicates some value. A guide to the values to be expected is given later and, in more detail, in the Maintenance Manual.

Pump Switch

The pump control switch N offers two positions, marked Pump Fast and Pump Slow. Its function is to energise either of two windings on the double-wound pump driving motor, thus selecting either of two pump speeds.

In Pump Fast, the normal setting, the pump runs at full speed until a pressure of 950 lbs.sq.in. is reached in the hydraulic system, after which the motor cuts to the slow speed to continue building up the maximum pressure of 1060 lbs.sq.in.

The output from the pump in this condition is entirely adequate to cover any combination of control movements possible, on a continuous basis.

Occasionally a sequence may require a minimum of very slow movement, in which circumstances the switch may be set to Pump Slow. This holds the pump at its slow speed, irrespective of pressure. The slower speed reduces still further the very small amount of pump noise, which is beneficial in a sequence which may itself be very quiet if it demands little camera movement.

On completion of such a sequence, the pump switch should always be returned to Pump Fast.

Elevator Arm Shut-Off Valve

This valve O enables the elevator arm hydraulic circuit to be isolated from the power supply, thus preventing unauthorised use of the control when the crane is unattended.

General

A rest P for the crane operator acts as a guard rail or as a seat if required. The vertical tubes are telescopic and the upper parts carrying the transverse rest may be adjusted to the height found most comfortable. This adjustment is carried out by slackening thumbscrews Q.

A support for a crib card is provided at R.

Fig. 4 shows the controls at the cameraman's position.

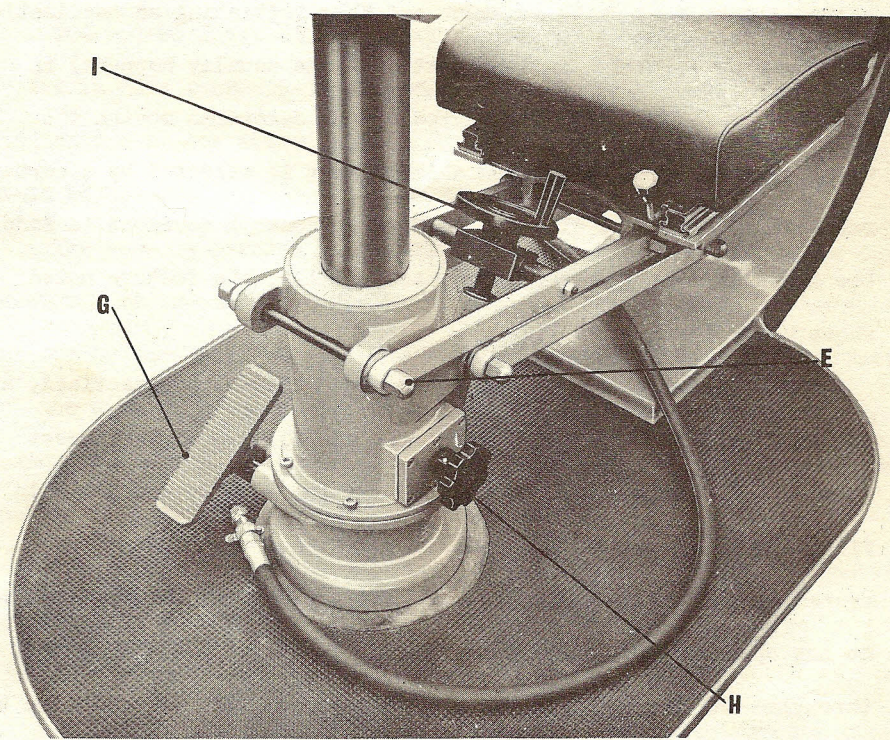
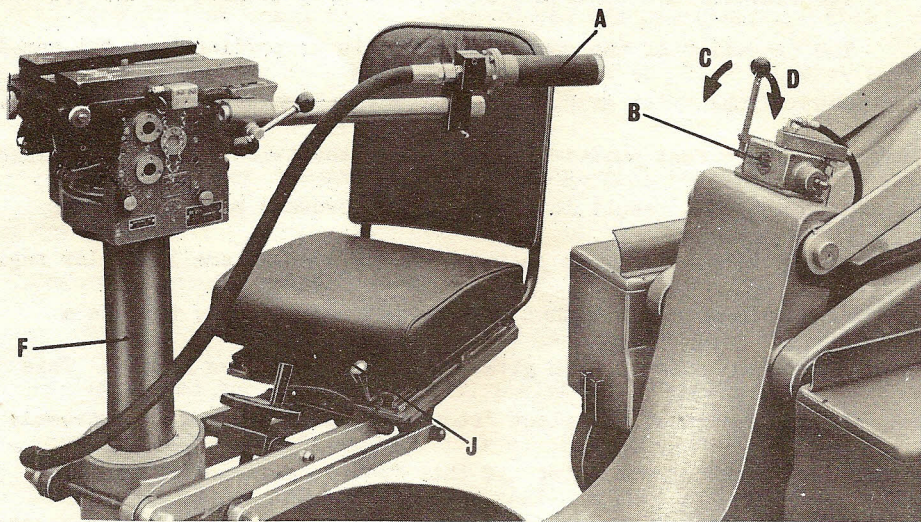


Fig. 4

Elevator Arm Control

The elevator arm control A is a twist grip mounted on the pan bar.

The elevation of the camera platform is proportional to the angular movement of the twist grip, which has a total movement of about 100° . From any given rest position, movement of the twist grip in one direction or the other will result in an upward or downward movement of the camera platform. Any rest position is, however, a small angular region of twist grip movement rather than a specific setting, that is a neutral region exists which gives neither up nor down motion. This enables the operator to select 'stop' without demanding an extremely precise setting of the grip; if this feature were not provided it would be virtually impossible to stop the elevator arm without accidentally selecting opposite movement and thus initiating an oscillation. This mode of operation is important when (as usually happens) an elevator arm movement is terminated by the cameraman moving the twist grip to 'meet it'. When a new height is selected by a certain rotation of the twist grip and no further control movement is made, the arm will follow up and stop automatically, the feature noted above being irrelevant.

The system is primarily position-proportional, as described, and for large movements of the control the arm follows at its preset speed which enables full travel - up or down - to be completed in five seconds. However, for small movements of the control the system is velocity-proportional in that small twist grip movements do not open the hydraulic valve fully. The flow of fluid is thus throttled and the speed of arm motion reduced. This feature can be exploited to give an extremely slow creep up or down; since a very

little practice enables the twist grip to be turned at a slow speed to keep it just ahead of the limit of the off position. In this way the arm can be raised or lowered through its full range at any speed required up to the maximum.

Practical use demonstrates that the control is quite instinctive and natural.

Camera Platform Control

The valve B enables camera height to be adjusted. The valve is spring loaded to its central, Off, position, in which the column carrying the camera is rigidly locked. Movement of the valve to position D causes the column to retract and thus lower the camera, while movement of the valve to position C raises the camera.

The column moves at a constant speed, up or down, as long as the valve is held over. Releasing the valve to its central position locks the column at its newly selected height.

Seat Adjustment

The seat is carried on parallel movement arms pivoted to the outer member E of the column. The seat, arms and outer member can be rotated as one by the operator, but the moving parts turn round a fixed part of the structure which carries the camera mounting column F. The camera thus remains stationary unless turned intentionally on its pan and tilt head.

A pedal G enables the cameraman to lock his seat against rotation. An adjustable stop below the pedal enables its movement to be correctly set.

A handwheel H permits the degree of frictional restraint against rotation to be adjusted to suit the cameraman.

The height of the operator's seat is adjustable by the handwheel I and this movement is also independent of the camera height.

The fore and aft position of the seat is adjustable by releasing a lever J enabling the seat to be slid into position.

O P E R A T I O N

Since the controls on the Heron Camera Crane are simple, and operate in a natural sense, very little practical experience need be added to the above description of control functions before the crew attain proficiency in operation.

The following points are noted for general guidance when putting the camera crane into operation.

- (1) Connect a suitable trailing led to the power socket.

This socket is mounted to suit the user's requirement, but is generally placed low down on the box structure in front of the operator. The lead is held by a cable clamp sited on the body of the truck. Fig. 2 shows a typical arrangement, shown in dotted line.

- (2) Connect the other end of the trailing lead to a 230V. 3 phase A.C. supply, suitable for a maximum load of 2KVA.

Normal continuous consumption of the Heron is 1.2KVA.

- (3) Note that the pressure gauge indicates a reading of at least 825 lbs.sq.in., which is the minimum (exhausted) pressure in the accumulator system.

- (4) Set the pump speed switch to Fast.

- (5) Insert key, and switch on main power.

- (6) Check that the three indicator lamps are illuminated showing that the supply is correct in all phases.

- (7) Unscrew elevator arm shut-off valve.*
- (8) Unlock platform lock.
- (9) Operate all controls to provide a functional check. Note that the pump begins to rotate, either when power is first switched on, or (should the accumulator have been left fully charged) after control movements have been made.

USE OF THE CONTROLS

Steering

The Heron Camera Crane is steered by angling its rear wheels, thus bringing the centre, around which it pivots, closer to the front wheels, and reducing the swing of the overhanging camera platform. Due allowance must therefore be made for transverse movement of the back of the truck during acute turns.

In steering $1\frac{1}{2}$ turns of the steering wheel are required over the useful steering range and at 'full lock' either way the truck turns about its inside front wheel. The useful steering range is denoted by a white-painted sector around the rim of the steering direction indicator.

Changeover

To change-over from crabbing to steering, the appropriate pedal is depressed and held down with the foot, until the steering wheel has been turned to line up the datum line and white arrow on the steering indicator. At this point the grasp on the steering wheel should be relaxed to allow the clutches to operate. It should be noted that the operation of the change-over mechanism will be felt by the tracker.

Coasting

When the speed and direction control levers are moved to the neutral, white-painted sector at the centre of their travel, power is cut off from the two driving motors, as described previously. The arrangement of the hydraulic circuit is such, however, that the

motors (acting as pumps) provide a slight braking load.

* Should the twist grip control have been inadvertently moved since this valve was closed, the elevator arm will follow up as the valve is opened; such movement cannot, however, be dangerous owing to the slow operation of the screw down valve. This design feature is incorporated as a safeguard.

Fuses

The type of electro-hydraulic drive employed is most unlikely to overload the motor but fuses are incorporated as a protection against any overload or fault. Should a fuse blow it may be replaced immediately after switching off by the key switch. If, on restoring power, the new fuse blows, some fault other than a momentary overload is present and the camera crane must be withdrawn from service while the circuit is investigated.

Pressure Gauge

The pressure gauge, as stated, measures the hydraulic pressure in the system which will always be between 825 lbs.sq.in. (when the accumulator is exhausted of fluid) and 1060 lbs.sq.in. (when the accumulator is fully charged).

Varying demands by the traction motors and elevator arm jack will cause the indicated pressure to vary between these limits. Generally, and with the pump set to Fast, such demands are fully covered by pump output and it is not necessary to monitor gauge readings.

With the pump set to run Slow, the effect of control movements on pressure can be noted; should the demand for hydraulic power exceed the reduced output of the pump, this effect will be seen as a continued fall towards 825 lbs. sq. in. Pressure must not be allowed to reach the lower figure or control will be lost.

Notes

1. Control movements may be continued for a limited period with the pump inoperative, using accumulator pressure. This facility may be very useful for moving the crane between studios, when it is impracticable to use a trailing power cable. With a fully charged accumulator the crane can be moved for approximately 110 feet before power is exhausted.

2. Cable guards are provided on all sides of the Heron Camera Crane. These are normally adjusted to provide $\frac{1}{4}$ inch clearance from the studio floor.

For use on uneven surfaces, or to negotiate ramps, etc., it may be necessary to increase this clearance. This can be carried out simply, by slackening the guard securing bolts and resetting the guards to the new height required.

General

The controls and indicators described are the only items which the camera crane crew need use, and there are no servicing procedures, or other adjustments with which they need be concerned.

A very few items of lubrication and other maintenance are required at infrequent intervals and instructions for these are given in the Maintenance Manual.

To assist maintenance personnel in their general understanding of the Heron Camera Crane, the Maintenance Manual gives a detailed description of the function and operation of all assemblies and systems. Some study of the mechanisms concerned will also help operators in making the most effective use of the controls.

