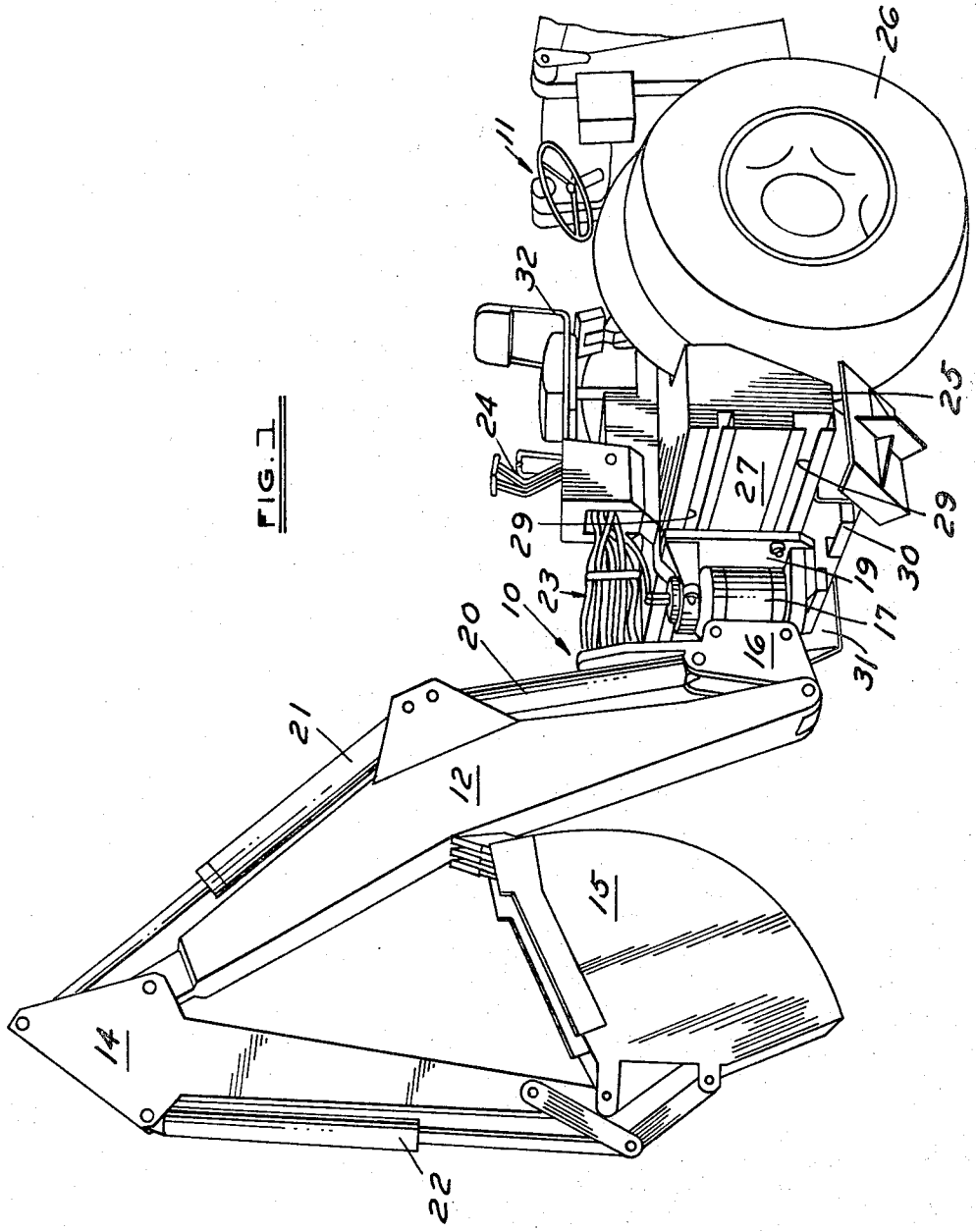
Oct. 29, 1968 A. H. LEESE 3,407,945

LOCKING MEANS FOR OFFSET BACKHOE

Filed Dec. 7, 1966 3 Sheets-Sheet 1

FIG. 1



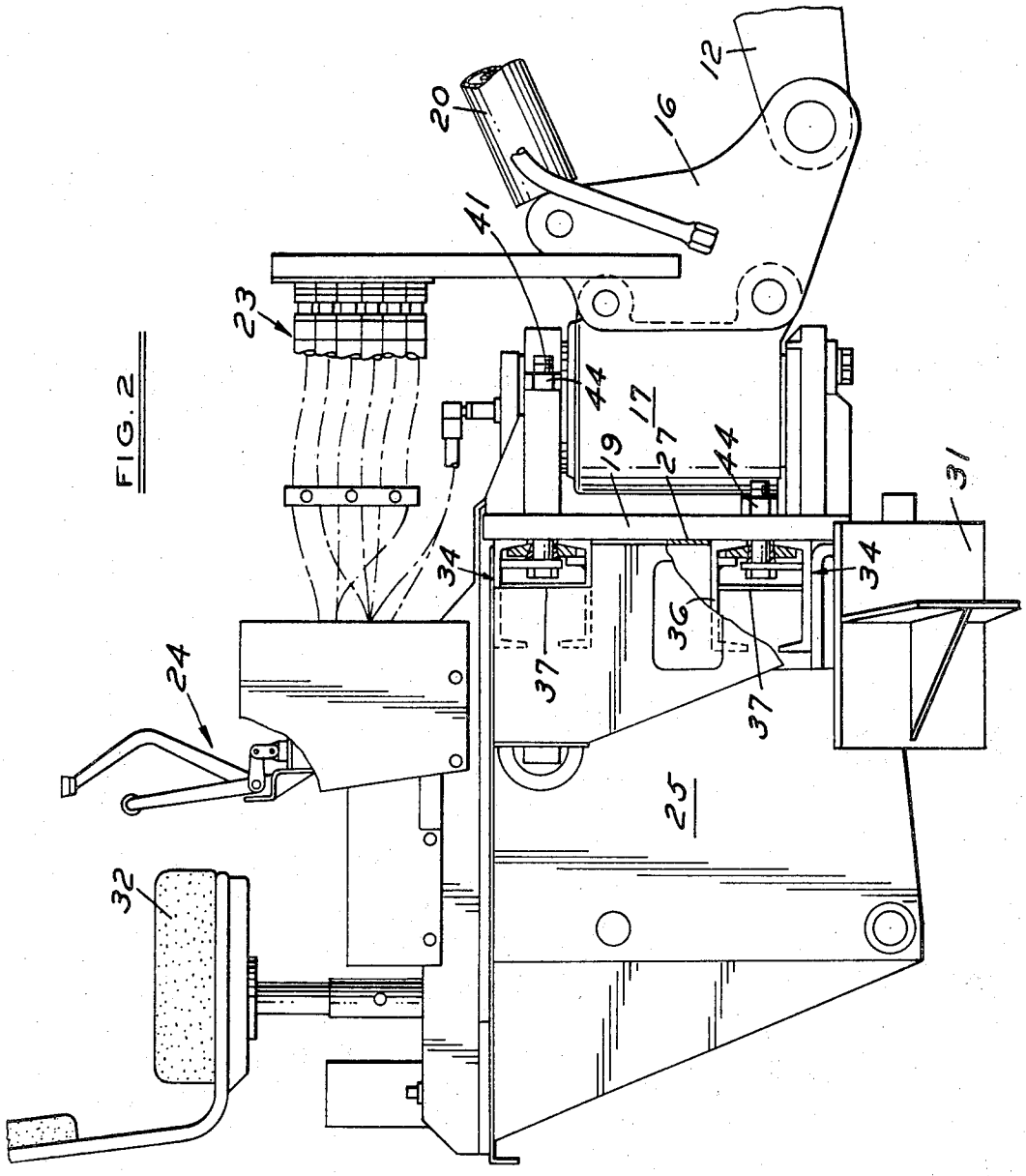
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Filed Dec. 7, 1966 3 Sheets-Sheet 2

FIG. 2



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LOCKING MEANS FOR OFFSET BACKHOE

Filed Dec. 7, 1966 3 Sheets-Sheet 3

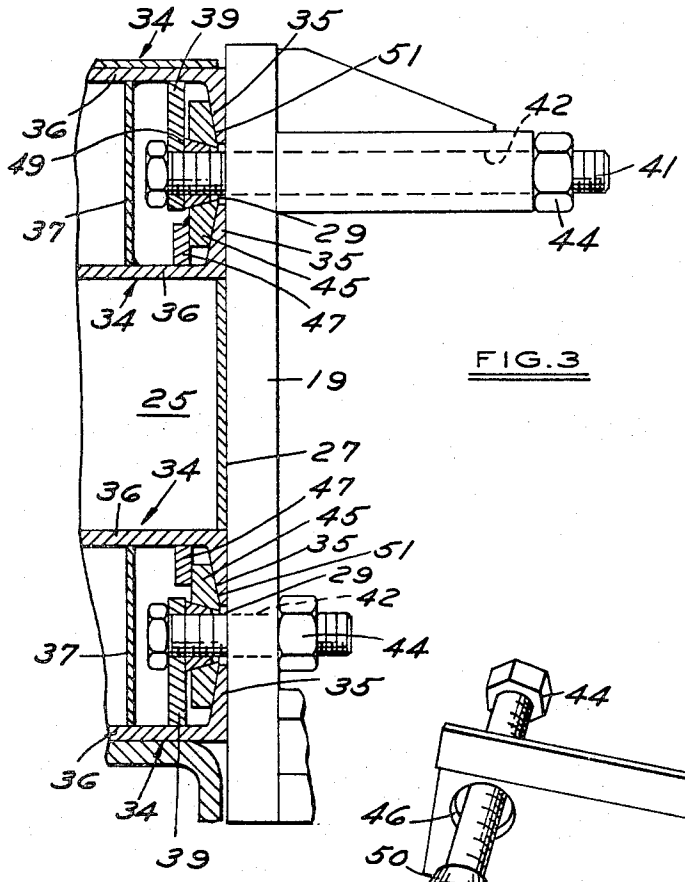


FIG. 3

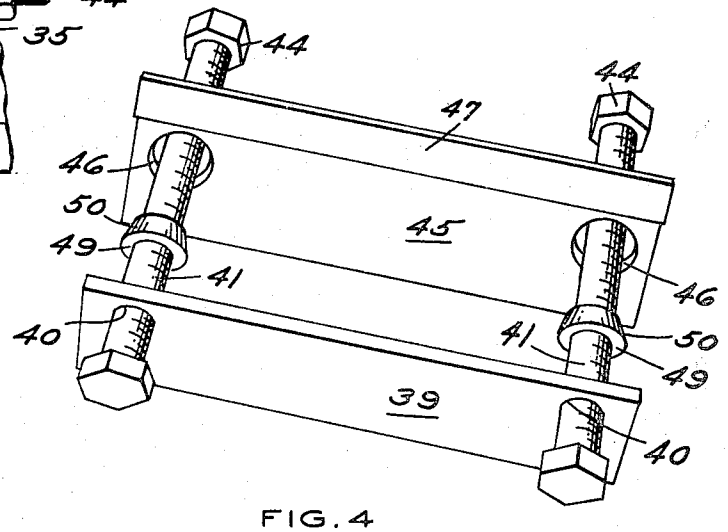


FIG. 4

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LOCKING MEANS FOR OFFSET BACKHOE

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4 Claims. (Cl. 214—138)

ABSTRACT OF THE DISCLOSURE

A locking means for the carriage of an adjustable offset backhoe of the type including a transverse frame having a pair of C-shaped slots and expansible blocks within the slots for supporting the carriage and holding it against movement along the slots is actuated by tightening the bolts holding the carriage against the frame. Preferably, a cam surface on each of the blocks laterally expands the blocks upon tightening the bolts so that the blocks tightly engage opposing side walls of the C-shaped slots.

This invention relates to offset backhoes.

Tractor-mounted adjustable offset backhoes often are provided with a frame extending transversely of the rear of the tractor and forming a track along which a carriage supporting the backhoe boom may be moved to position the backhoe to either side of the tractor. Clamps, including bolts carried by the carriage, engage the track to hold the backhoe at any set position along the length of the track.

In the backhoe of the present invention, the track consists of a pair of horizontally-extending, rearwardly-opening C-shaped slots in the transverse frame which receives clamping blocks and bolts, the threaded end of each of which projects through the slot and is received in a bore in the carriage. Upon tightening a nut on each bolt against the carriage, the carriage is securely clamped against displacement along the track.

The improved clamping mechanism includes blocks within the C-shaped slots which, upon tightening the clamping bolts, laterally expand to span across the inner walls of the slot and secure the carriage against loosening and movement as the backhoe is operated.

Among the objects of the present invention is to provide an improved backhoe construction in which the carriage clamp does not tend to loosen during operation; to provide such a construction in which the carriage is firmly clamped without the necessity of tightening auxiliary bolts or wedgers; and generally to improve mechanisms of the type described.

Other objects, and objects relating to details and economies of construction and use will be more apparent from the detailed description to follow.

My invention is clearly defined in the appended claims. In the claims, as well as in the description, parts may at times be identified by specific names for clarity and convenience, but such nomenclature is to be understood as having the broadest meaning consistent with the context and with the concept of my invention as distinguished from the pertinent prior art. The best form in which I have contemplated applying my invention is illustrated in the accompanying drawings forming a part of this specification in which:

FIGURE 1 is an isometric view of a tractor with backhoe and loader attached, only the rear portion of the tractor and loader being shown.

FIGURE 2 is a side elevation of the backhoe unit, the boom being broken away and the dipstick and bucket not being shown. Portions of the hydraulic hoses are broken away for convenience of illustration, and a portion of the frame is broken away to show details of interior construction.

FIGURE 3 is an enlarged elevation of the clamping mechanism for clamping the carriage in any adjusted position along the frame, portions of the frame being broken away or shown in vertical section and portions of the carriage being broken away.

FIGURE 4 is a perspective view of the bolts, clamping blocks and associated parts for clamping the carriage in any adjusted position.

Referring to FIGURE 1, the backhoe of the present invention is adapted for mounting on a tractor **11**. The backhoe comprises a boom **12**, a dipstick **14** and a bucket **15** which are articulated and operated in the usual manner. The boom **12** is pivotally mounted for vertical swinging movement on a swing frame **16**, which is supported for horizontal swinging movement on a rotary cylinder **17** supported by a carriage **19**. The boom **12**, dipstick **14** and bucket **15** are operated in the customary manner by hydraulic cylinders **20**, **21** and **22**, respectively. Operation of these cylinders is controlled by a bank **24** of manually operated hydraulic control valves connected with the cylinders **20**, **21** and **22** by hoses **23**.

The backhoe **10** is supported on the tractor **11** by a main frame **25** secured to the chassis of the tractor. The main frame **25** extends between the rear wheels of the tractor, one wheel **26** being shown and projects somewhat behind the wheels, terminating in a vertical, relatively flat rear face **27** provided with a pair of vertically-spaced, parallel, horizontal, rearwardly-opening C-shaped slots extending from side to side of the tractor and supporting the carriage **19**, as will be described. A pair of stabilizers **30** and **31** are pivotally mounted on the lower portion of the main frame **25** and may be lowered during use of the backhoe to aid in stabilizing the tractor **11** against overturning and to take the weight off the rear wheels of the tractor.

A rearwardly facing operator seat is mounted on the backhoe main frame **25** adjacent the valve bank **24**.

Referring now more specifically to FIGURES 2 and 3, the backhoe main frame **25** preferably is a welded assembly of parts including four channels **34**, each of the channels extending transversely from side to side of the tractor and being arranged in pairs with facing spaced flanges **35** forming the lips of the C-shaped slots **29**. The outer surface of the rear flange **35** lies generally in the plane of the rear face **27** of the main frame, as indicated in FIGURE 3. The webs **36** of the channels **34** extend forwardly from the rear face **27** of the main frame and form the opposite side faces of the C-shaped slots **29**. Preferably, a plate **37** extending between the webs **36** of each pair of flanges forms the bottom of each C-shaped slot **29** and holds the flanges against spreading due to clamping action against the webs **36**, as will be explained.

The carriage **19** is supported on the rear face **27** of the main frame **25** and clamped in any adjusted position along the C-shaped slots **29** by the clamping mechanism best shown in FIGURE 4. This clamping mechanism comprises a first block **39** adapted to be received within each C-shaped slot **29** and having a hole **40** adjacent each end for closely receiving a bolt **41**. Two bolts **41** project through each C-shaped slot **29**, extend beyond the rear face **27** of the main frame and are received within bores **42** in the carriage **19**. Nuts **44** on the bolts **41** serve to clamp the carriage in any adjusted position along the C-shaped slots, as indicated in FIGURE 3.

A second block **45** is located within each C-shaped slot **29**, the second block having a rearwardly tapering hole **46** adjacent each end to receive bolts **41**, the blocks **45** preferably having a stepped or offset cross section to locate the offset portion **47** of the block in the general plane of the block **39** (see FIG. 3). A bushing **49** is received on each bolt **41** between the blocks **39** and **45**

and is provided with a conical or tapering outer periphery **50** coacting with the holes **46** of the block **45**.

The arrangement is such that as the nuts **44** are tightened, the blocks **39** and **45** will be drawn together, the block **39** carrying the bushings **49** into engagement with the block **45** so as to laterally expand the assembly of blocks **39** and **45**. In addition, the rear face **51** of each block **45** preferably is provided with converging upper and lower surfaces generally matching the taper of the flanges **35** forming the lips of the C-shaped slot. Thus, upon tightening the nuts **44**, not only is the carriage **19** firmly clamped against the rear face **27** of the main frame, but the outer edge portion of the block **39** and the opposite, offset portion **47** of the block **45** also is pressed outwardly into firm engagement with the opposite side faces of each C-shaped slot so as to lock the above-described clamping assembly against any movement within the C-shaped slots and thereby prevent loosening of the clamps and unintended movement of the carriage **19** along the slots. At the same time, upon loosening nuts **44**, the blocks **39** and **45** will separate slightly, thus loosening the clamping means and permitting ready adjustment of the carriage along the slots. The plate **37** extending between the webs **36** of each pair of channels prevents spreading of the channels by the outwardly-pressed blocks **39** and **45**.

I claim:

1. In an adjustable offset backhoe in which a backhoe boom is supported on a tractor by a carriage slidable along a track carried by a frame on the rear of the tractor, the improvement comprising: the track being formed by a frame having members defining two spaced, parallel rearwardly-opening, C-shaped slots extending across the rear of the tractor, bolts extending from the slots and

received within holes in the carriage and adapted to be tightened to draw the carriage against the frame, a block within each slot and engaged by at least one of the bolts, the block having two complementary portions adapted to be cammed laterally outwardly upon tightening of the bolt so as to cause the block to laterally expand and wedge between opposite walls of the C-shaped slot and to clamp the block against the inner face of the margins of the slot.

2. In an adjustable offset backhoe as claimed in claim **1**, the members defining each of the slots comprising two parallel, transversely extending channels having facing, spaced flanges defining the margins of the slot.

3. In an adjustable offset backhoe as claimed in claim **2**, the mid-portion of the flanges of the channels defining each slot being joined by a plate forming the bottom of the slot and aiding in preventing spreading of the channels due to outward force of the blocks.

4. In an adjustable offset backhoe as claimed in claim **1**, one of the blocks being laterally fixed relative to the bolt and the other block having a tapering hole receiving the bolt, and a cooperating tapering member carried into engagement with said tapering hole by said one block to center the hole of said other block about said bolt, centering movement of said other block serving to press the lateral edges of the blocks outwardly into firm engagement with the opposite side faces of the slot.

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HUGO O. SCHULZ, *Primary Examiner.*