Sept. 14, 1948. L. D. HAGENBOOK 2,449,473

CONNECTING MEANS FOR SHAKER CONVEYER TROUGHS

Filed May 3, 1946 2 Sheets-Sheet 1

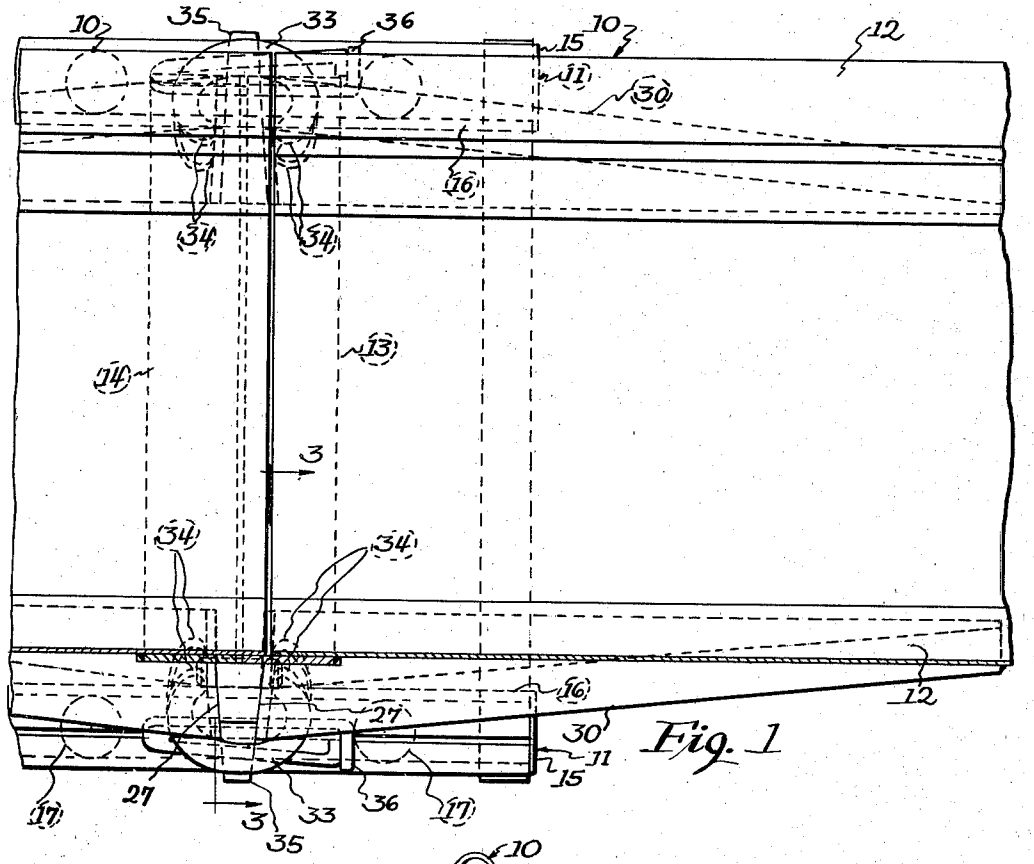


Fig. 1

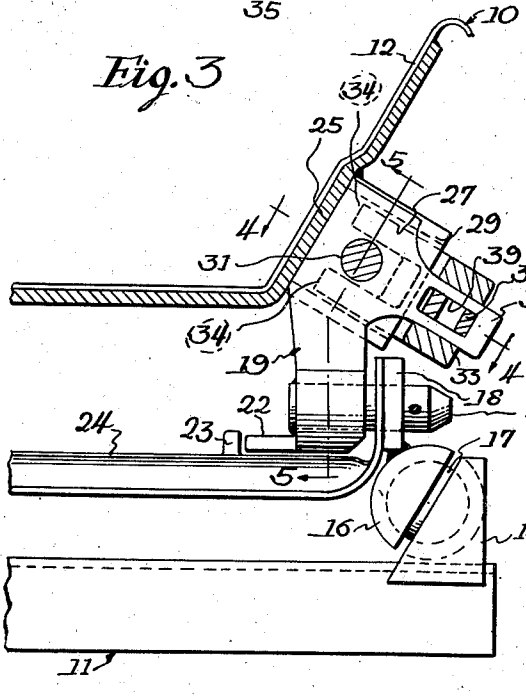


Fig. 3

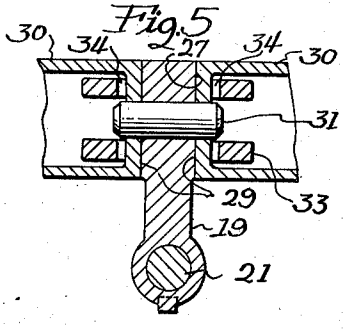


Fig. 5

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CONNECTING MEANS FOR SHAKER CONVEYER TROUGHS

Filed May 3, 1946 2 Sheets-Sheet 2

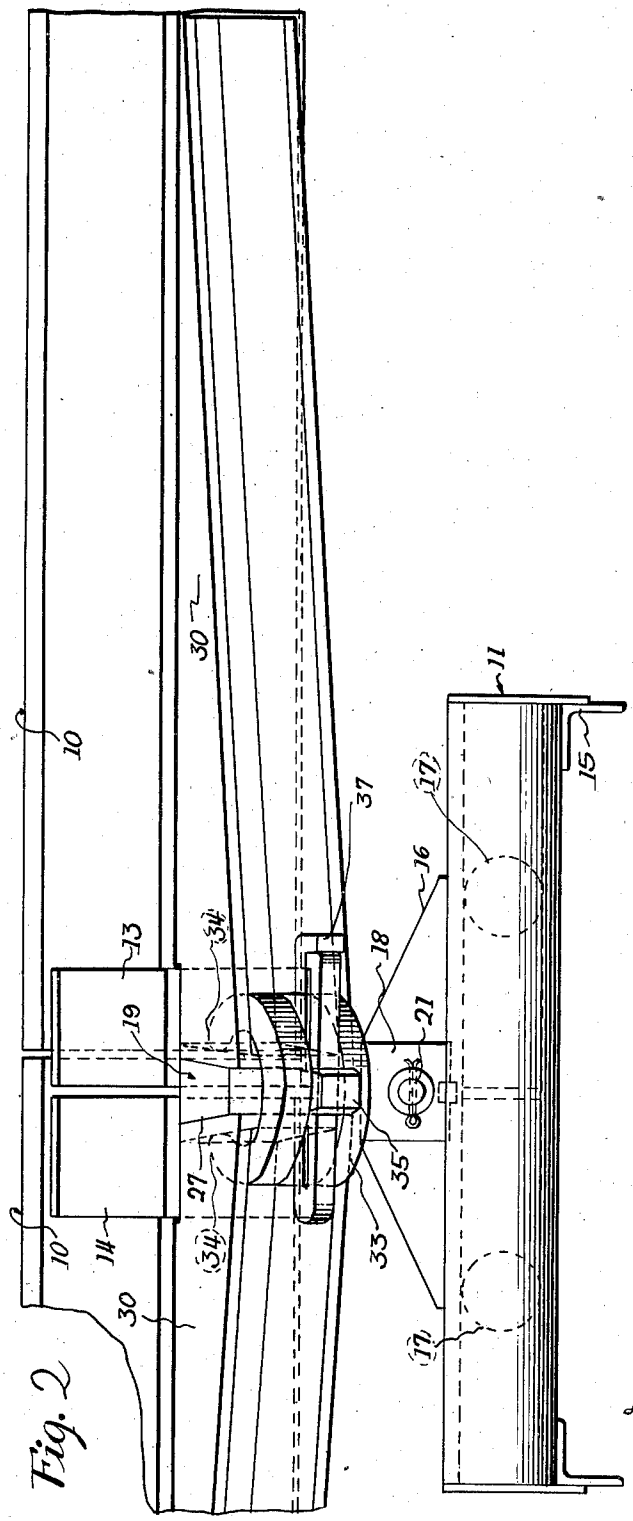


Fig. 2

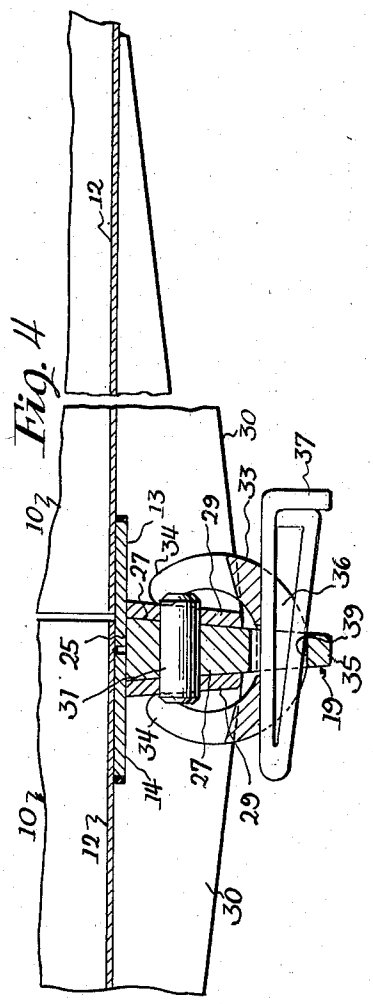


Fig. 4

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UNITED STATES PATENT OFFICE

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CONNECTING MEANS FOR SHAKER CONVEYER TROUGHS

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Application May 3, 1946, Serial No. 666,917

9 Claims. (Cl. 198—220)

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This invention relates to improvements in connecting means for the troughs of a shaker conveyor trough line.

The principal objects of my invention are to provide an improved and simplified form of connecting means for connecting the troughs of a shaker conveyor trough line together, which is of a quickly detachable form and does away with the usual connecting bolts heretofore used for this purpose.

This and other objects of my invention will appear from time to time as the following specification proceeds and with reference to the accompanying drawings wherein:

Figure 1 is a fragmentary plan view of adjacent ends of the troughs of a shaker conveyor trough line, with certain parts of the troughs broken away and shown in section;

Figure 2 is an enlarged fragmentary view in side elevation of the troughs shown in Figure 1;

Figure 3 is an enlarged fragmentary transverse sectional view taken substantially along line 3—3 of Figure 1;

Figure 4 is a fragmentary sectional view taken substantially along line 4—4 of Figure 3; and

Figure 5 is a sectional view taken substantially along line 5—5 of Figure 3.

In the embodiment of my invention illustrated in the drawings two shaker conveyor troughs 10, 10 are shown as being mounted on a ball frame 11. Said troughs are each of a well known construction having a flat bottom and outwardly flared inclined sides 12, 12, and are shown as being connected together in abutting relation with respect to each other, although they may be connected together in overlapping relation as well.

A reinforcing plate 13 is herein shown as extending across the bottom of and upwardly along opposite sides of one end of the trough 10 and as projecting beyond the end thereof. The projecting portion of said reinforcing plate is overlapped by the adjacent end of the next adjacent trough 10. A reinforcing plate 14 extends along the adjacent end of the next adjacent trough 10 and is spaced inwardly from the end thereof and is abutted by the reinforcing plate 13. Said reinforcing plates, besides reinforcing the ends of the troughs, also serve to provide a tight joint therebetween and prevent the spilling of fine coal therethrough when the troughs are in connected relation with respect to each other, it being understood that a reinforcing plate 13 extends across one end of each trough 10 and that a reinforcing plate 14 extends across the opposite end of each of said troughs.

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The ball frame 11 may be of any well known form and is herein shown as including a lower frame member 15, suitably held in fixed relation with respect to the ground during operation of the conveyor, and an upper frame 16 mounted thereon and guided for reciprocable movement therealong on balls 17, 17.

The upper frame 16 of the ball frame 11 is provided with a pair of longitudinally extending upright ears 18, 18 disposed at opposite sides thereof (see Figure 3). Said ears are each adapted to form a pivotal support for a trough supporting lug 19 forming a supporting means for adjacent ends of the troughs 10, 10.

The trough supporting lugs 19, 19 are pivotally mounted on the ears 18, 18 for movement about axes extending transversely of the conveyor on laterally extending pins 21, 21 mounted adjacent the lower ends of said lugs and extending outwardly therefrom. A stop 22 extends inwardly from the lower end of each supporting lug 19 and is adapted to engage a stop 23, projecting upwardly from a cross frame member 24 of the upper frame 16. Said stops 22, 22 and 23, 23 serve to limit inward movement of said trough supporting lugs with respect to their associated ears 18, 18 when said trough supporting lugs are in an upright position. It should here be understood that said trough supporting lugs are pivoted downwardly when inserting said pins through the apertured portions of said ears.

Each trough supporting lug 19 has an upper head portion extending angularly downwardly in a plane generally perpendicular to the plane of the lower portion of the associated inclined side 12 of the trough 10. Said upper head portion has an inner face 25 conforming substantially to the angle of inclination of the inclined side 12 of the trough 10 and adapted to be abutted by said inclined side of said trough. Said supporting lug also has opposite forwardly and rearwardly facing engaging faces 27, 27, inclined inwardly from the inner face 25, towards the longitudinal center of said lug. Said engaging faces are adapted to be engaged by abutment plates 29, 29, herein shown as being formed integrally with and closing adjacent ends of reinforcing members 30, 30 for the sides of said troughs. Said reinforcing members extend along and are secured to the outsides of said inclined sides of said troughs for a portion of the lengths thereof and taper from said abutment plates inwardly towards the sides of said troughs. Said abutment plates are also inclined towards each other as they extend out-

wardly from said troughs, so as to conform to the angles of said engaging faces 27, 27.

Each trough supporting lug 19 has a longitudinally extending pin 31 mounted in the upper head portion thereof and extending forwardly and rearwardly from opposite sides thereof. Said pin is adapted to extend through apertured portions of the abutment plates 29, 29, to form a positive means for supporting said abutment plates and adjacent ends of said troughs on said trough supporting lugs.

A C-clamp 33 is provided to positively hold the abutment plates 29, 29 in engagement with the engaging faces 27, 27 of the supporting lugs 19, 19. Said C-clamp, as herein shown, has a pair of vertically spaced engaging ends 34, 34 on each side thereof, which are adapted to extend along opposite sides of the pin 31 and engage the outer faces of the abutment plates 29, 29. A tongue 35, having an elongated aperture 39 formed therein, extends angularly outwardly from the supporting lug 19 in the general plane of inclination of the head of said supporting lug. Said tongue is adapted to extend through an outer apertured portion of each C-clamp.

The outer end of each C-clamp 33 is provided with a slotted portion 36 opening to the outer side thereof, which is adapted to receive a yieldable wedge-shaped key 37. Said yieldable key is adapted to extend through said aperture 39 of said tongue and engage the inside of the slotted portion of said C-clamp. Said key may be made from spring steel and is herein shown as being so formed that it will tend to spring outwardly and will yield inwardly as it is driven through the aperture 39 of the tongue 35 into engagement with the slotted portion of the C-clamp 33. Said key and C-clamp will thus draw the abutment plates 29, 29 into engagement with the engaging faces 27, 27 when said key is driven through said apertured portion of said tongue, and said key when driven in place will tend to spring outwardly and firmly hold said abutment plates and engaging faces in engagement with each other, and will thus form a positive means for rigidly connecting adjacent ends of the troughs 10, 10 together.

The supporting lugs 19, 19 are usually connected to the ears 18, 18 of the ball frame 11 by cotter keys so as not to be lost when the troughs are disconnected therefrom. When adjacent ends of the troughs 10, 10 are being connected together, the lug 19 on one side of the trough line is first pivoted to an upward position and one projecting end of the pin 31 is inserted through the apertured portion of one abutment plate 29. The opposite side of said trough is then mounted on the opposite supporting leg 19 in the manner just described. The adjacent end of the next adjacent trough is then mounted on the opposite projecting end of the pin 31. The C-clamps 33, 33 are then engaged with the outer sides of opposite abutment plates 29, 29 and moved or driven inwardly along said plates until the key 37 may be inserted through the aperture 39 of the tongue 35. Driving of said keys through said apertures of said tongues will move said C-clamps inwardly a further distance and will positively engage adjacent abutment plates with the engaging faces 27, 27 of their trough supporting lugs 19, 19, and said keys tending to expand or spring outwardly will firmly hold said C-clamps in position and hold adjacent ends of the troughs in connected relation with respect to each other.

While I have herein shown and described one form in which my invention may be embodied, it will be understood that the construction thereof and the arrangement of the various parts may be altered without departing from the spirit and scope thereof. Furthermore, I do not wish to be construed as limiting my invention to the specific embodiment illustrated, excepting as it may be limited in the appended claims.

I claim as my invention:

1. In a connecting means for adjacent ends of the troughs of a shaker conveyor, an abutment member projecting laterally from one end of one trough, an abutment member projecting laterally from an adjacent end of a next adjacent trough, a trough supporting lug adapted to be mounted on a reciprocating support for said troughs and having opposite faces adapted to be abutted by said abutment members, said abutment members having outer plane faces inclined so as to approach each other as they extend outwardly from said troughs, a C-clamp adapted to engage outer faces of said abutment members and to be moved into engagement therewith from the outside thereof, and an engaging member having engagement with said lug and said C-clamp, for moving said C-clamp inwardly along said abutment members and positively engaging the inner faces of said abutment members with said lug and for locking said C-clamp into engagement with said abutment members.

2. In a connecting means for adjacent ends of the troughs of a shaker conveyor, an abutment member projecting laterally from one end of one trough, an abutment member projecting laterally from an adjacent end of a next adjacent trough, a trough supporting lug adapted to be mounted on a reciprocating support for said troughs and having opposite faces adapted to be abutted by said abutment members, said abutment members having outer plane faces inclined so as to approach each other as they extend outwardly from said troughs, a C-clamp adapted to engage said outer faces of said abutment members and to be moved into engagement therewith from the outside thereof to engage said abutment members with opposite faces of said lug, and a yieldable engaging member having engagement with said lug and said C-clamp, for moving said C-clamp inwardly along said inclined outer faces of said abutment members and drawing said abutment members together into engagement with said lug and for locking said C-clamp in engagement with said abutment members.

3. In a connecting means for adjacent ends of the troughs of a shaker conveyor, an abutment member projecting laterally from one end of one trough, an abutment member projecting laterally from an adjacent end of a next adjacent trough, a trough supporting lug adapted to be mounted on a reciprocating support for said trough, having opposite faces adapted to be abutted by said abutment members and having interengaging connection with said abutment members, a C-clamp adapted to have engagement with the outer faces of said abutment members and to be moved into engagement therewith from the outside thereof, to engage said abutment members with opposite faces of said lug, and a wedge-shaped key adapted to have engagement with said C-clamp and lug, for locking said C-clamp in engagement with said abutment members.

4. In a connecting means for adjacent ends of the troughs of a shaker conveyor, an abutment member projecting laterally from one end of one

trough, an abutment member projecting laterally from an adjacent end of a next adjacent trough, a trough supporting lug adapted to be mounted on a reciprocating support for said trough, having opposite faces adapted to be abutted by said abutment members and having interengaging connection with said abutment members, a C-clamp adapted to have engagement with the outer faces of said abutment members and to be moved into engagement therewith from the outside thereof, to engage said abutment members with opposite faces of said lug, and a wedge-shaped key adapted to be driven through an apertured portion of said lug and having engagement with said C-clamp, for holding said C-clamp in engagement with said abutment members, said key being yieldable in an outward direction when engaging said C-clamp and lug to lock itself to said C-clamp and lug.

5. In a connecting means for adjacent ends of the troughs of a shaker conveyor, a reciprocable support, a pair of trough supporting lugs mounted on opposite sides of said support for pivotal movement with respect thereto about transverse axes, said trough supporting lugs each having opposite plane engaging faces, abutment members projecting laterally from opposite sides of one end of one of said troughs, abutment members projecting laterally from opposite sides of an adjacent end of a next adjacent trough, said abutment members being adapted to abut opposite faces of said lugs, and having outer plane faces inclined so as to approach each other as they extend outwardly from said troughs C-clamps adapted to engage said outer faces of adjacent of said abutment members at their opposite ends, and engaging members having interengaging connection with said lugs and said C-clamps, and adapted to move said C-clamps inwardly along said outer faces of said abutment members and engage said abutment members with and hold said abutment members in engagement with said lugs.

6. In a connecting means for adjacent ends of the troughs of a shaker conveyor, a reciprocable support, a pair of trough supporting lugs mounted on opposite sides of said support for pivotal movement with respect thereto about transverse axes, said trough supporting lugs each having opposite plane engaging faces, abutment members projecting laterally from opposite side of one end of one of said troughs, abutment members projecting laterally from opposite sides of an adjacent end of a next adjacent trough, said abutment members being adapted to abut opposite faces of said lugs, projecting means projecting from opposite engaging faces of said lugs and adapted to engage said abutment members, to support said abutment members and troughs on said lugs, clamping means engaging opposite faces of said abutment members, for holding said abutment members in engagement with said lugs, and locking keys engaging said clamping means and lugs, for firmly engaging said abutment means with said engaging faces and for locking said clamping means in engagement with said abutment members.

7. In a connecting means for adjacent ends of the troughs of a shaker conveyor, a reciprocable support, a pair of trough supporting lugs mounted on opposite sides of said support for pivotal movement with respect thereto about transverse axes, said trough supporting lugs each having opposite plane engaging faces, abutment members projecting laterally from opposite sides

of one end of one of said troughs, abutment members projecting laterally from opposite sides of an adjacent end of a next adjacent trough, said abutment members being adapted to abut opposite faces of said lugs and having interengaging connection therewith, and C-clamps adapted to engage the outer faces of said abutment members and hold said abutment members in engagement with opposite engaging faces of said lugs, said lugs each having an apertured portion, and substantially wedge-shaped keys adapted to be driven through said apertured portions of said lugs into engagement with said C-clamps for locking said C-clamps in engagement with said abutment members.

8. In a connecting means for adjacent ends of the troughs of a shaker conveyor, a reciprocable support, a pair of trough supporting lugs mounted on opposite sides of said support for pivotal movement with respect thereto about transverse axes, said trough supporting lugs each having opposite plane engaging faces, abutment members projecting laterally from opposite sides of one end of one of said troughs, abutment members projecting laterally from opposite sides of an adjacent end of a next adjacent trough, said abutment members being adapted to abut opposite faces of said lugs, and C-clamps adapted to engage the outer faces of said abutment members and hold said abutment members in engagement with said lugs, said lugs having apertured portions formed therein, and substantially wedge-shaped keys adapted to be driven through said apertured portions of said lugs into engagement with said C-clamps, for lcoking said C-clamps in engagement with said abutment members, said keys being yieldable to lock said C-clamps to said lugs.

9. In a connecting means for adjacent ends of the troughs of a shaker conveyor, a reciprocable support, a pair of trough supporting lugs mounted on opposite sides of said support for pivotal movement with respect thereto about transverse axes, said trough supporting lugs each having opposite plane engaging faces, abutment members projecting laterally from opposite sides of one end of one of said troughs, abutment members projecting laterally from opposite sides of an adjacent end of a next adjacent trough, said abutment members being adapted to abut opposite faces of said lugs, projecting means projecting from opposite engaging faces of said lugs and adapted to have interengaging connection with said abutment members, to support said abutment members and troughs on said lugs, clamping means adapted to engage the outer faces of said abutment members and hold said abutment members in engagement with said lugs, said lugs having outer apertured portions, and yieldable spring keys of a substantially wedge-shaped formation adapted to be driven through said apertured portions of said lugs into engagement with said clamping means, for locking said clamping means in engagement with said abutment members.

LOY D. HAGENBOOK.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,344,300	Hagenbook	Mar. 14, 1944

Certificate of Correction

Patent No. 2,449,473. September 14, 1948.

LOY D. HAGENBOOK

It is hereby certified that errors appear in the printed specification of the above numbered patent requiring correction as follows:

Column 3, line 58, for "leg 19" read *lug 19*; column 4, line 22, claim 1, after "engage" insert the word *said*; column 5, line 32, claim 5, after "lugs" strike out the comma and insert the same in line 34, after "troughs"; line 51, claim 6, for "side" read *sides*;

and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 21st day of December, A. D. 1948.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.