Nov. 29, 1966 C. C. BROWN 3,287,776

MULTIPLE STRING MANUAL OPERATED ELEVATOR

Filed Jan. 13, 1964 2 Sheets-Sheet 1

Fig. 1

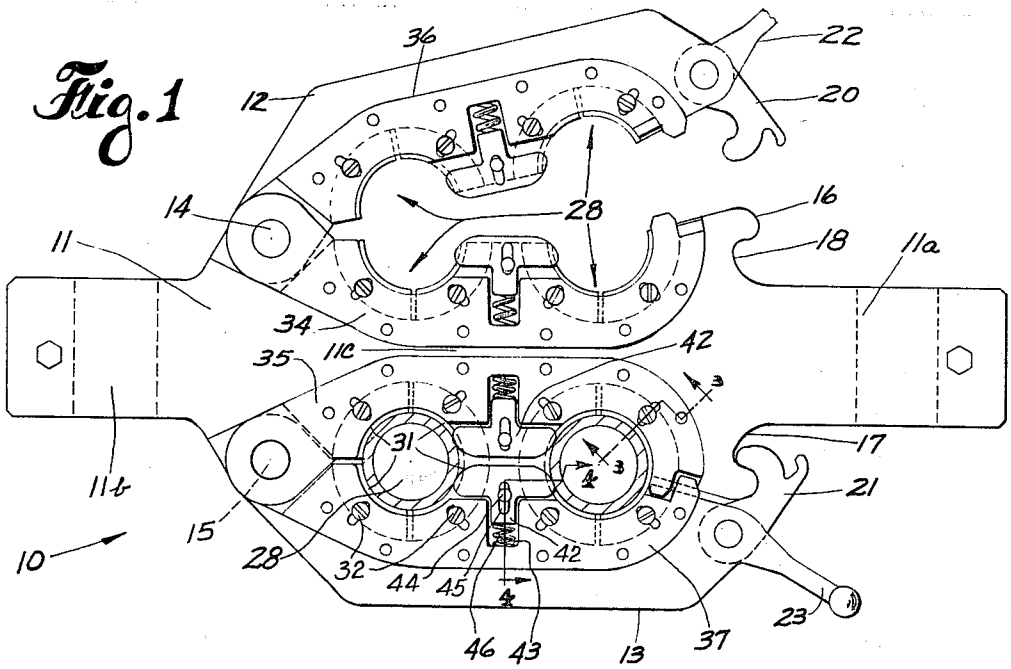



Fig. 2

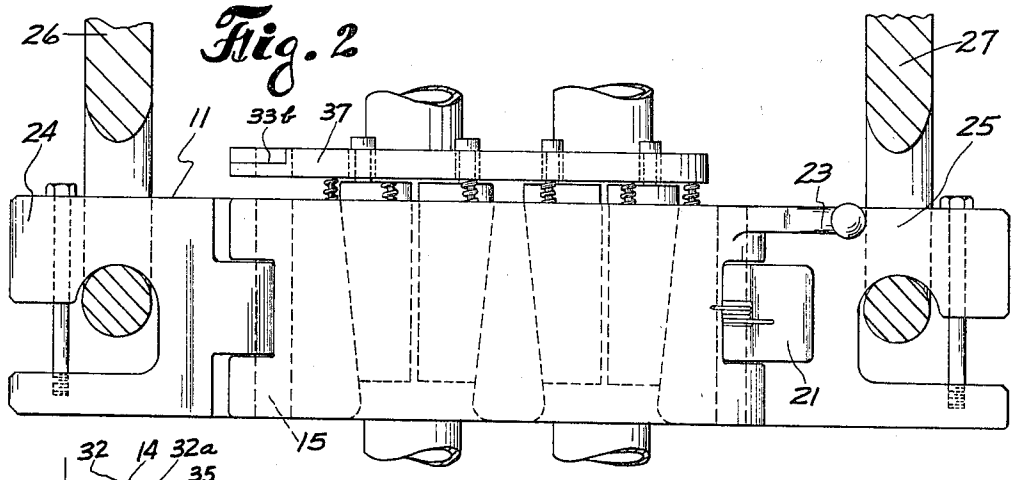



Fig. 3

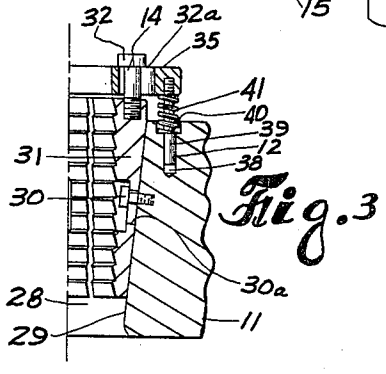
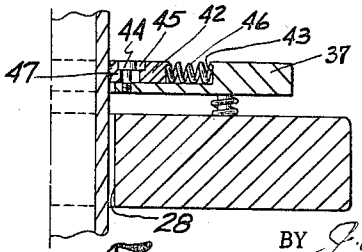



Fig. 4




CICERO C. BROWN
INVENTOR.

BY J. Vincent Martin
Joe E. Edwards
Jack R. Springgate
ATTORNEYS

Nov. 29, 1966 C. C. BROWN 3,287,776

MULTIPLE STRING MANUAL OPERATED ELEVATOR

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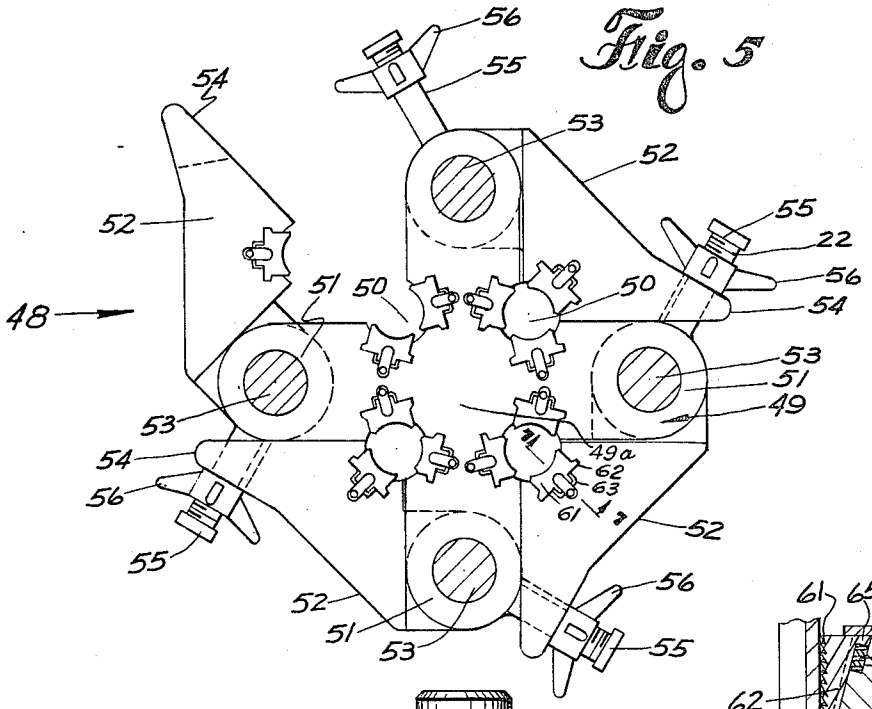


Fig. 5

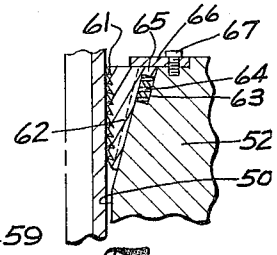


Fig. 7

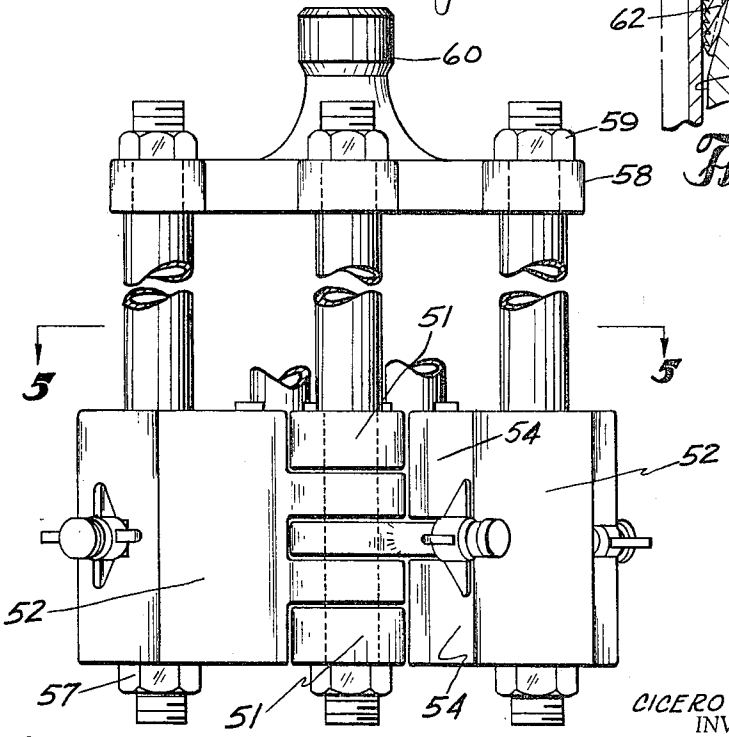


Fig. 6

CICERO C. BROWN
INVENTOR.

BY J. Vincent Martin
Joe C. Edwards
Judith P. Springgate
ATTORNEYS

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# MULTIPLE STRING MANUAL OPERATED ELEVATOR

Cicero C. Brown, 8490 Katy Road, Houston, Tex.

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14 Claims. (Cl. 24—81)

The present invention relates to a manual operated elevator for supporting at least three pipes from a traveling block for running or removal of three or more pipes simultaneously into and from a single well bore.

The usual elevator device now in common use on well drilling rigs includes a hinged or pivoted jaw element which is adapted to encircle a well pipe when in operating position. In such devices the jaw elements must be manually guided into position around the pipe and must be manually latched and unlatched to engage and disengage the pipes. This manual latching and unlatching of the jaw elements is done by the "derrick man" stationed in the upper end of the well derrick and one of the workmen on the floor wherein the elevator is actually engaged and disengaged from the well pipes during the running or removal of pipe strings into and from the well bore.

During recent years with the advent of multiple completions in a single well bore, it has become desirable to provide an elevator which will simultaneously support three or more pipe strings during the running or removal of such pipe strings into and from the well bore. It is, therefore, one object of this invention to provide an elevator device for engaging at least three pipe strings which extend therefrom in parallel relationship and can be run simultaneously into and removed from a single well bore.

Another object of the present invention is to provide a manual operated elevator device which will engage at least three pipes extending therethrough in parallel relationship at any level on such pipes.

Still another object of the present invention is to provide a manual operated elevator to engage at least three pipes extending therethrough in parallel relationship with the pipes being spaced sufficiently close to each other in such elevator to allow the pipes to be simultaneously run into and removed from a single well bore.

The construction designed to carry out the invention will be hereinafter described, together with other features thereof.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings forming a part thereof, wherein examples of the invention are shown, and wherein:

FIGURE 1 is a plan view of one form of an elevator device constructed in accordance with the invention.

FIGURE 2 is a side elevation view of the elevator device disclosed in FIGURE 1.

FIGURE 3 is a partial sectional view taken along line 3—3 in FIGURE 1.

FIGURE 4 is a partial sectional view taken along line 4—4 in FIGURE 1.

FIGURE 5 is a plan view of another form of an elevator device constructed in accordance with the present invention.

FIGURE 6 is a side elevation view of the elevator device shown in FIGURE 5.

FIGURE 7 is a partial sectional view of the gripping elements of the device shown in FIGURE 5 and taken along line 7—7 in FIGURE 5.

Referring more in detail to elevator **10** as illustrated in FIGURES 1 through 4, it includes body **11** having arms **11***a* and **11***b* and a central portion **11***c* and jaws **12** and **13** which are pivotally mounted to body **11** by hinge pins **14** and **15**. Body **11** is provided with fingers **16** and



**17** and recesses **18** and **19** which are engaged by latch mechanisms **20** and **21** on jaws **12** and **13**, respectively. Latch mechanisms **20** and **21** are pivotally mounted to jaws **12** and **13** as shown and are provided with actuating handles **22** and **23** for manual latching and unlatching of the jaws to the body whereby the latch mechanisms engage the fingers and recesses on the body as shown in the lower portion of FIGURE 1.

Arms **11***a* and **11***b* are provided at each end with suitable lifting lugs **24** and **25** for engagement with eyebolts, bales or links **26** and **27** as is clearly shown in FIGURE 2.

Adjoining portions of body **11** and jaws **12** and **13** are provided with complementary recesses which form pipe receiving opening **28**. A typical portion of one of these recesses has been shown in FIGURE 3 wherein it can be seen that inner surface **29** is tapered and provided with a threaded hole to receive bolt **30** which extends through a slot **30***a* in the slip **31** allowing slip **31** to move up and down within recess **28** in engagement with surface **29**. The vertical movement of slip **31** is thus seen to result in a radial movement of slip **31** by virtue of the slope of surface **29**. Thus, when slip **31** is moved downwardly along surface **29** it will also move inwardly and thereby engage a pipe which is positioned within opening **28**. It should be noted that slips **31** are made in segmental form and as shown in FIGURE 1 two slips **31** would be installed in jaw **12** and two slips **31** would be installed in body **11** around a single opening **28**.

Bolt **32** is threaded into the upper end of each of slips **31** and extends down through a slot **32***a* in actuator plate **33** into threaded engagement with slip **31**.

Actuator plates **33** are formed in segments and are hinged about pins **33***a*, **33***b* positioned directly over pins **14** and **15**. Segments **34** and **35** of actuator plate **33** are secured to body **11** and jaw segments **36** and **37** of actuator plate **33** are secured to jaws **12** and **13**, respectively, as hereinafter more fully described.

FIGURE 3 best illustrates the connection between actuator plate **33** and body **11**. As shown in FIGURE 3 this connection is typical of all of the connections of actuator plate **33** to body **11** and to jaws **12** and **13**. Body **11** is drilled as at **38** to receive pin **39** the upper end of which is secured to actuator plate **33** by any suitable manner, for example, threading as shown in FIGURE 3. Body **11** is also bored concentrically with hole **38** at **40** to receive spring **41**. Spring **41** therefore surrounds pin **39** and seats on the shoulder formed between bore **40** and hole **38** at its lower end and against the under side of actuator plate **33** at its upper end. It should be noted that hole **38** is sufficiently deep to allow movement of pin **39** downwardly therein when a force is exerted downwardly on actuator plate **33** which compresses spring **41**.

Dogs **42** are mounted in the body segments **34** and **35** and the jaw segments **36** and **37** of actuator plate **33** as best shown in FIGURE 4. As shown in FIGURE 1 and FIGURE 4 suitable recesses **43** are provided in segments **34**, **35**, **36** and **37** of actuator plate **33** and bolts **44** extend through the slot **45** in dog **42**. The width of the slot **45** is less than the width across the head of bolt **44**. Spring **46** is positioned within recess **43** and engages dogs **42** to urge dogs in a direction whereby teeth **47** on dogs **42** will engage a pipe extending through opening **28**.

As best shown in FIGURE 4 the closing of jaws **12** or **13** with a pipe positioned within the recess **28** will cause teeth **47** of dogs **42** to engage the pipe and when body **11** is lifted the segments of actuator plate **33** will receive the weight of the pipe being lifted. This weight will compress springs **41** causing slips **31** to move down on surface **29** whereby slips **31** will firmly engage the pipe positioned therein. This downward and radial movement of slips **31**

is possible since bolt **32** is positioned within slot **32***a* in plate **33** and bolt **30** is positioned within the slot **30***a* in slips **31**.

Release of a pipe which is engaged within opening **28** is accomplished by unlatching the jaw which forms a part of the recess in which the pipe is engaged and swinging the jaw away from the body **11**. This will allow the teeth of slips **31** and teeth **47** on dogs **42** to be moved out of engagement with the pipe. The springs **41** will move the segments of actuator plate **33** upwardly as soon as teeth **47** are moved from the pipe thereby causing slips **31** to be raised upwardly and move radially outward within opening **28**. In this position the pipe will be free of engagement with elevator **10**.

As illustrated in FIGURES 5 through 7 elevator **48** is provided with a body **49** having a central portion **49***a* and arms **51** forming a cross with pipe receiving opening **50** formed in the spaces between adjoining arms **51** of body **49** and in the adjoining surface of jaws **52** when jaw **52** is positioned between two of arms **51**. Each of the jaws **52** is povoted at one end by one of the pins **53** extending through arms **51** and is provided with ears **54** which are engaged by a latching mechanism **55** to secure jaws **52** in position between adjacent arms **51** and to complete the remaining portion of opening **50**. Latch mechanisms **55** are pivoted about pins **53** and extend into the space between ears **54** to engage jaws **52** with wing nut **56** tightening on the threads of latch mechanism **55** to firmly engage jaws **52** between arms **51**.

As shown in FIGURE 6 the pins **53** are provided with nuts **57** to engage the lower side of body **49** and extend upwardly through arms **51**, jaws **52** and latch mechanism **55** and a substantial distance above body **49** where they are secured to lifting plate **58** by nuts **59**. Lifting plate **58** is provided with a suitable connection **60** which may be a swivel connection for attachment to the traveling block used in a derrick.

FIGURE 7 is a partial sectional view taken on line **7—7** in FIGURE 5 and is typical of any section taken through the slips **61** which are secured as shown to jaws **52** and to body **49**. Around opening **50** body **49** and jaws **52** are provided with an upwardly and outwardly sloping dove-tail slot **62** in which a similarly shaped projection extending from slips **61** is engaged. Recess **63** is provided in jaw **52** behind slot **62** and spring **64** is positioned therein and has its upper end engaging a finger **65** which extends from the back of slip **61**. Cover plate **66** is secured to jaw **52** by screw **67** and is positioned above finger **65** to provide an upper stop for the upward movement of slip **61** responsive to the force exerted on finger **65** by spring **64**.

When a pipe is positioned within opening **50**, jaws **52** closed and wing nut **56** tightened on latch mechanism **55**, slips **61** in jaws **52** and in body **49** will engage the pipe positioned therein. Lifting the elevator **48** will tend to move the slips downwardly and because of the slope of dovetail slot **62** this downward force resulting from the weight of pipe being lifted will cause slips **61** to tend to move downwardly and inwardly into tighter engagement with the pipe thereby assuring a firm grip on the pipe.

In both forms of the device shown in the drawings the jaws are positioned between arms and are manually secured and released from engagement with the body. Both elevators also provide for the engagement of at least three pipes which extend in parallel relationship to each other and such pipes are positioned sufficiently close to each other to be run or removed as a unit from a single well bore. If desired, additional pipe receiving openings may be provided in both forms of the present invention by a slight modification of the body structure. For example, in FIGURE 1, six pipes could be accommodated by separating each of the two openings **28** a short distance apart and providing a third opening **28** on each side of body **11** therebetween and spaced at approximately the same radial distance from the center of central portion **11***c* of body **11** as the other openings **28**. Such openings would also have their complementary recesses in the jaws **12** and **13**. In the form of the invention illustrated in FIGURE 5 additional pipe receiving openings **50** may be readily added by changing the configuration of the body **49** to have additional arms. Such arms should be equally spaced and may be five or six in number. As in the case with the form shown in FIGURE 1 the addition of pipe receiving openings in the form shown in FIGURE 5 will cause each of the openings to be a slightly greater distance from the center of the body **49** but in such cases the tubing strings will be sufficiently closely spaced to be run into a single well bore.

From the foregoing it can be seen that the present invention provides a manual operated elevator handling at least three pipes at the same time and will support such pipes in close spaced parallel relationship allowing the pipes to be run into and removed from a single well bore. The elevators of the present invention include a body having arms or jaws with pipe receiving openings formed by complementary recesses in the jaws and in the body between the arms. Such openings have spring loaded gripping means to provide engagement with a pipe extending therethrough.

The foregoing disclosure and description of the invention is illustrative and explanatory thereof, and various changes in the method, as well as in the details of the illustrated construction, may be made within the scope of the appended claims without departing from the spirit of the invention.

I claim:

**1.** An elevator for handling a well pipe,
said elevator having a body,
a plurality of jaw members pivotally connected to said body,
means latching said jaw members to said body,
there being pipe receiving openings formed by adjoining complementary receses in said body and said jaw members,
pipe engaging means mounted in said openings, and
spring means urging said pipe engaging means in a direction away from engagement with a pipe extending through said openings.

**2.** An elevator device for handling four well pipes including
a body having a central portion and a plurality of arms extending therefrom,
a plurality of jaw members,
means pivotally securing one end of each of said jaw members to said body,
there being four pipe receiving openings in adjacent walls of said body and said jaw members,
said pipe receiving openings being formed by complementary recesses in said body and said jaw members,
said complementary recesses in said body being positioned near the juncture of said arms and said central portion, and
a plurality of pipe gripping elements positioned in each of said pipe receiving openings.

**3.** An elevator device according to claim **2** including,
spring means urging said pipe gripping elements in an upward direction whereby engagement of a pipe by said pipe gripping elements and an upward movement of the elevator will cause said elements to move downwardly and inwardly within said opening into tighter gripping engagement with said pipe.

**4.** An elevator device according to claim **3** including,
means limiting the upward movement of said pipe gripping elements responsive to the urging of said spring means.

**5.** An elevator device for handling four well pipes including,
a body having a central portion and four arms extending therefrom whereby said body is cross-shaped,

four jaw members each pivotally secured at one end to the outer extremity of one of said arms and latched at their other end to another of said arms whereby said jaw members each closes the opening between adjacent arms of said body,

there being four pipe receiving openings in said body and said jaw members,

there being a recess through said body at each intersection of said arms with said central portion,

there being complementary recesses through said jaw members completing said recesses through said body to form the said four pipe receiving openings through said device, and

a plurality of pipe gripping elements in each of said pipe receiving openings.

**6.** An elevator device for handling four well pipes including,

a body having a central portion and two arms extending therefrom at opposite ends of said central portion,

two jaw members pivotally secured at one end to said body,

means latching the other end of said jaw members to said body,

there being four pipe receiving openings in adjacent walls of said body and said jaw members,

said openings being formed by complementary recesses in said jaw members and in said body near the juncture of said arms with said central portion of said body,

a plurality of pipe gripping elements in each of said pipe receiving openings.

**7.** An elevator device for handling at least three well pipes including,

a body having a central portion and two arms extending from said central portion,

two jaw members positioned one on each side of said body,

each one of said jaw members being positioned adjacent said body in engagement with one side of two of said arms,

means pivotally securing one end of each of said jaw members to said body,

means releasably latching said jaw members to said body,

there being at least three pipe receiving openings in adjacent walls of said body and said jaw members, and

pipe gripping members mounted in each of said pipe receiving openings,

each side of said body defines at least two recesses and each of said jaw members defines at least two recesses complementary to said recesses in said body and said recesses define said pipe receiving openings.

**8.** An elevator device for handling at least three well pipes including,

a body having a central portion and four arms extending therefrom and equally spaced thereabout whereby said body is cross-shaped,

a plurality of jaw members,

each one of said jaw members being positioned adjacent said body in engagement with one side of two of said arms,

said body and said jaw members defining complementary recesses,

means pivotally securing one end of each of said jaw members to said body,

means releasably latching said jaw members to said body,

there being four pipe receiving openings in adjacent walls of said body and said jaw members,

the complementary recesses defined by said body and said jaw members forming said pipe receiving openings which are positioned at the internal corners formed by said arms, and



pipe gripping members mounted in each of said pipe receiving openings.

**9.** An elevator device according to claim **8** including

pipe engaging means mounted in said pipe receiving openings and

spring means urging said pipe engaging means in a direction away from engagement with a pipe extending through said openings.

**10.** An elevator device according to claim **6** wherein said pipe engaging means comprises,

a plurality of movable pipe gripping slips, two of which are mounted in said body and at least one of which is mounted in said jaws around each of said openings.

**11.** An elevator device for handling at least three well pipes, including

a body having a central portion,

a first jaw member disposed on one side of the body,

means pivotally securing one end of said first jaw member to the body at a point offset from said central portion to permit swinging of said first jaw member toward and away from said body,

a second jaw member disposed on that side of the body opposite the side on which said first jaw member is located,

means pivotally securing one end of the second jaw member to the body at a point offset from said central portion to permit swinging of said second jaw member toward and away from said body,

means for releasably latching the free end of said first jaw member to the body to secure said first jaw member in position adjacent said body,

means for releasably latching the free end of said second jaw member to the body to secure said second jaw member in position adjacent said body,

said body having at least one recess in each side adjacent each jaw member when the jaw member is in latched position,

each jaw member having a complementary recess coacting with said recess in the body to form a pipe receiving opening between the jaw member and said body, and

pipe supporting means mounted in each pipe receiving opening for supporting a pipe extending therethrough.

**12.** An elevator device for handling at least three well pipes, including

a body,

a plurality of jaw members,

means pivotally securing one end of each of said jaw members to said body,

means releasably latching said jaw members to said body,

there being at least three pipe receiving openings in adjacent walls of said body and said jaw member, and

each of said jaw members being independently movable with respect to said body,

pipe gripping members mounted in each of said pipe receiving openings,

the latching of said jaw members adapted to move said pipe gripping members into pipe gripping engagement with pipes positioned in said pipe receiving openings.

**13.** An elevator device according to claim **12**, wherein said body includes a central portion and a plurality of arms extending therefrom, and

each one of said jaw members being positioned adjacent said body in engagement with one side of two of said arms.

**14.** An elevator device according to claim **12**, wherein

two arms extended from said central portion of said body, and

two jaw members are positioned one on each side of said body.

**(References on following page)**

**References Cited by the Examiner**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 534,345 | 2/1895 | Nilsson. | |
| 1,150,870 | 8/1915 | Lincoln | 173—167 X 5 |
| 1,706,214 | 3/1929 | Davidson. | |
| 1,731,128 | 10/1929 | Edwards. | |
| 1,844,379 | 2/1932 | Campbell | 294—90 |
| 3,096,075 | 7/1963 | Brown. | |

FOREIGN PATENTS

| | | |
|---|---|---|
| 218,823 | 7/1924 | Great Britain. |



WILLIAM FELDMAN, *Primary Examiner.*
D. A. GRIFFIN, *Examiner.*