April 3, 1945. H. F. PARKER ET AL 2,373,048

HOIST

Filed Dec. 23, 1942 3 Sheets-Sheet 1

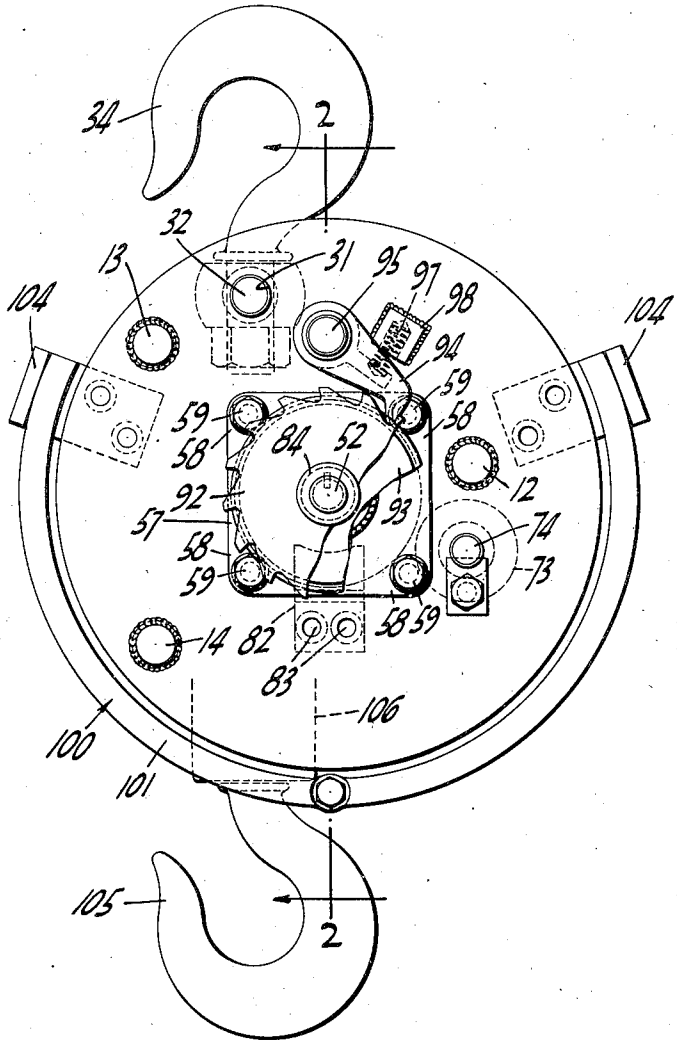


FIG. 1.

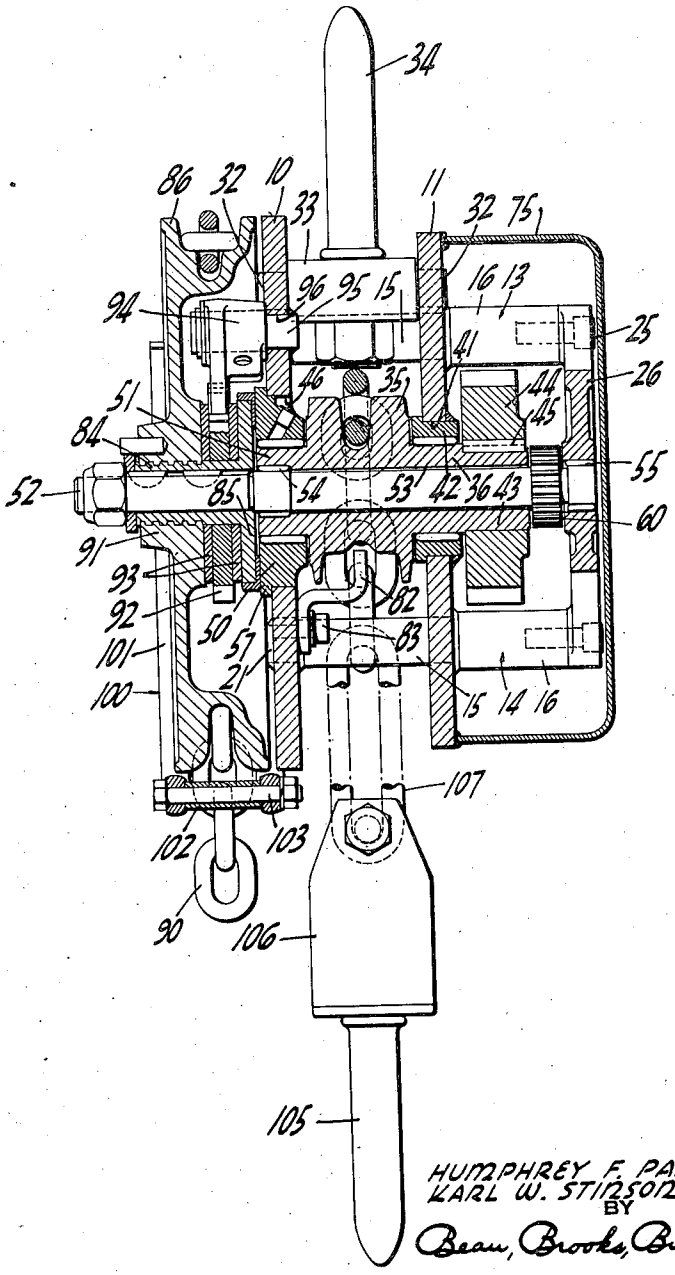
INVENTORS
HUMPHREY F. PARKER AND
KARL W. STINSON
BY
Bean, Brooks, Buckley & Bean.
ATTORNEYS

April 3, 1945. H. F. PARKER ET AL 2,373,048

HOIST

Filed Dec. 23, 1942 3 Sheets-Sheet 2

FIG. 2.



INVENTORS
HUMPHREY F. PARKER AND
KARL W. STINSON
BY
Beam, Brooks, Buckley & Beam.
ATTORNEYS

April 3, 1945. H. F. PARKER ET AL 2,373,048

HOIST

Filed Dec. 23, 1942 3 Sheets-Sheet 3

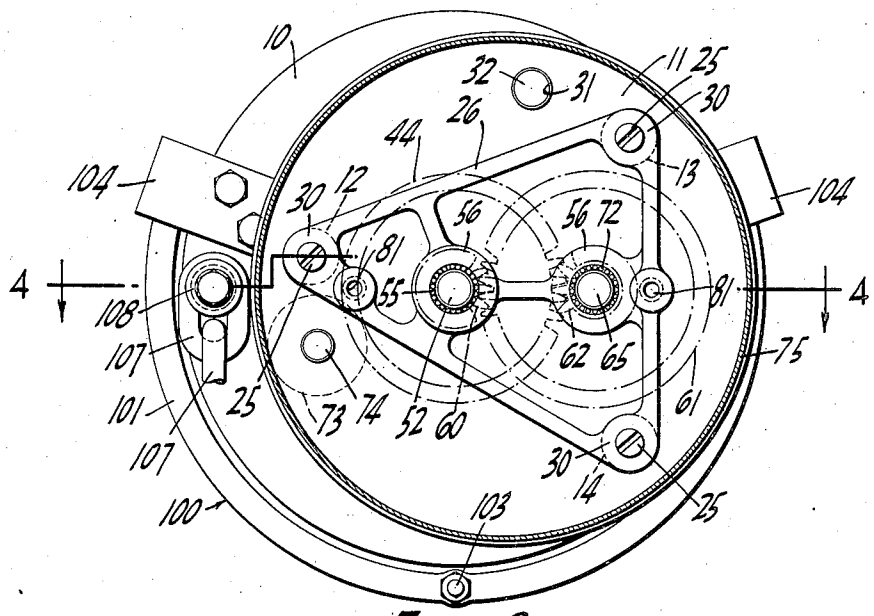


FIG. 3.

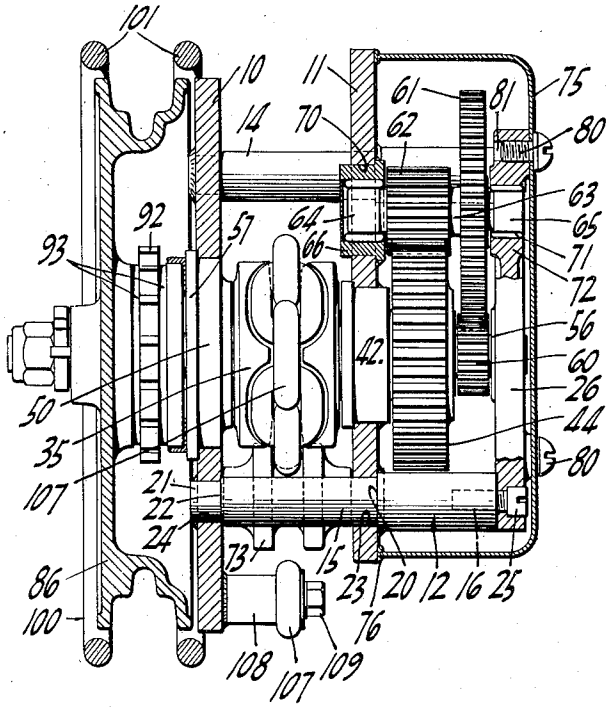


FIG. 4.

INVENTORS
HUMPHREY F. PARKER AND
KARL W. STINSON
BY
Beam, Brooks, Buckley & Beam.
ATTORNEYS

Patented Apr. 3, 1945

2,373,048

UNITED STATES PATENT OFFICE

2,373,048

HOIST

Humphrey F. Parker, Kenmore, N. Y., and Karl W. Stinson, Columbus, Ohio, assignors to Columbus McKinnon Chain Corporation, Tonawanda, N. Y., a corporation of New York

Application December 23, 1942, Serial No. 469,882

1 Claim. (Cl. 254—169)

Our invention relates in general to hoists and in particular to hand hoists of the type having the body part made of spaced plates between which the load wheel is supported.

The objection to hoists of this type of the present-day design is that the spaced plates of the body part must be made separable and secured together by detachable means in order to assemble and disassemble the hoist parts, particularly the load wheel and shaft, with the result that permanent rigidity of the body parts is difficult to achieve.

The principal object of our invention has been to overcome the disadvantages of the present-day design and to provide a hoist of this type with body parts which are permanently fastened together, preferably by welding, whereby the parts will permanently remain fixed and rigid.

A further object has been to provide one of the spaced body parts with an aperture large enough to permit the passage of the load wheel when assembling the device.

Another object has been to provide a flanged bushing for engagement with such enlarged aperture and for the bearing support of one end of the load shaft.

A further object has been to provide a plurality of studs for passage through the body parts and to which such body parts are secured by welding thereby permanently holding them in spaced relation.

Moreover, the spacing studs of our invention have preferably a number of reduced diametrical portions whereby body spacing shoulders are provided.

Furthermore, the spacing studs of our invention are extended beyond the face of one of the body parts to form spaced supports for the bearing spider of our device.

The above objects and advantages have been accomplished by the device shown in the accompanying drawings of which:

Fig. 1 is a side elevational view of our device with the hand wheel removed;

Fig. 2 is a transverse sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is an elevational view of the opposite side of the hoist with the cover removed;

Fig. 4 is a sectional plan view taken on line 4—4 of Fig. 3.

Our device comprises two body parts or plates 10 and 11 spaced apart to accommodate and support the various parts of our device. The plate 11 is somewhat smaller than the plate 10, and is eccentrically arranged therewith in order that the weight of the hoist may be kept as low as possible. These plates are held in spaced relation by means of a plurality of studs 12, 13 and 14. Each of the studs preferably has a reduced portion 15 extending forwardly from the full-diameter body portion 16, thereby providing a shoulder 20. At the forward end of the reduced portion 15 there is also preferably a reduced portion 21 whereby a shoulder 22 is provided. The body plate 11 is provided with a plurality of apertures 23 for the reception of the reduced portions 15 of the studs. The body plate 10 is likewise provided with registering apertures 24 for the reception of the reduced portions 21 of the studs. The body plates 10 and 11 are engaged with their respective shoulders 22 and 20 where they are securely welded in place by any suitable means. The body plates and the studs thereby form a rigid body for the hoist which does not depend upon screws, bolts or the like to permanently hold the parts together in rigid manner. Obviously, instead of separate body plates and studs, these parts may be made in the form of a single casting.

The full-size body portion 16 of each of the studs is provided with a screwthreaded aperture at its outer end for the reception of bolts 25 whereby the bearing spider 26 may be secured in place. This bearing spider is provided with countersunk bosses 30 which register with the studs 12, 13 and 14 and which are engaged by the screws 25. This spider is also provided with suitable bearings for other parts of the hoist to be hereinafter described.

Each of the body plates 10 and 11 is provided with a registering aperture 31 for the reception of the trunnion bearings 32 of a trunnion block 33 to which the hoist hook 34 is attached.

The load wheel 35 of my device is preferably made an integral part of the load shaft 36. One end of the shaft is supported by a bearing ring 42 which passes through an aperture 41 formed in the body plate 11 where it is secured preferably by means of welding. The end of the shaft which is mounted in the bearing ring 42 is provided with an extended end 43 upon which the driven gear 44 is mounted and to which it is secured preferably by means of a key 45.

The body plate 10 is provided with an aperture 46 arranged concentric with respect to the aperture 41 of the body plate 11 and of a diameter sufficiently large to permit the passage of the load wheel 35. A bearing ring bushing 50 is mounted within the aperture 46 and is formed with a bearing for the support of the end 51 of

the load shaft. The bushing 50 is provided with a flange 57 for engagement with the outer face of the body plate 10 to limit the axial movement of the bushing, said flange having tabs 58 extending preferably from four points, equidistantly arranged, through which bolts 59 are passed, whereby the bushing is securely held in place in detachable manner. By this construction the body plates and studs may be initially assembled and welded, after which the load wheel and shaft may be passed axially through the opening 46 and bushing 42. The bushing ring 50 may then be engaged with and secured within the opening 46, whereby the load wheel will be detachably secured within the body plates and may be easily and quickly replaced in case of wear or breakage without the necessity of disassembling the spaced body plates. As hereinbefore stated this novel construction makes it possible to provide a permanently secured and rigid body part for the hoist.

The operating shaft 52 passes through an opening 53 formed axially in the load shaft 36 and has one end rotatably supported by a bearing 54 formed in the end of the load shaft. The other end of the operating shaft extends through the load shaft and is mounted in a suitable bearing 55 supported by a hub 56 formed in the bearing spider 26. The operating shaft is provided with a drive pinion 60 which may be made integral with the shaft or secured thereto by any suitable means. This pinion is arranged between the end 43 of the load shaft 36 and the inner face of the bearing spider 26. This pinion meshes with an intermediate gear 61. This intermediate gear is preferably formed integrally with an intermediate pinion 62 both having a common shaft 63. The shaft is provided with bearing ends 64 and 65, the end 64 being supported by the body plate 11 in a bushing 66 mounted in an aperture 70 where it is secured preferably by means of welding. The end 65 is preferably mounted in antifriction bearing 71 supported in the boss 72 of the spider.

A chain guide, preferably in the form of a wheel 73, is rigidly mounted upon a shaft 74 having its ends supported or journaled in suitable apertures formed in the body plates 10 and 11. Obviously, if desired, the wheel may be rotatably mounted upon a shaft which is removably secured to the body plates or welded thereto as desired.

A bell-shaped cover 75 is provided for inclosing the reducing gears and the spider. This cover preferably contacts the body plate 11 where a gasket 76 may be provided for sealing the edge. The cover is preferably secured in place by means of screws 80 which pass through the cover into screwthreaded apertures 81 formed in the spider. The usual stripper 82 is provided, and this is secured preferably to the inner face of the body plate 10 by means of a bolt 83.

One end of the operating shaft 52 extends outwardly and has fixed thereon a screwthreaded member 84 which is provided with an integral flange 85. The screwthreaded member and flange form part of a Weston brake mechanism, common and well known. Mounted upon the screwthreaded member 84 is the hand-chain wheel 86 of our device around which passes the hand chain 90 in customary manner. This hand wheel is provided with an integral flanged hub 91 which faces the flange 85 of the Weston brake and between which is mounted the ratchet wheel 92 of the brake. As is customary, a friction washer 93 is arranged between one side of the ratchet wheel and the flange 85, and another washer, located at the opposite side of the wheel, is arranged between it and the flanged hub 91. The ratchet wheel is rotatably mounted upon the threaded member 84 and held against rotation in one direction by means of a ratchet pawl 94. This ratchet pawl is rotatably mounted upon a stud 95 which passes into a suitable aperture 96 formed in the body plate 10, where it is secured in place preferably by welding. A spring 97 is carried by a lug 98, secured to the outer face of the body plate 10 by means of welding, the other end of the spring being engaged with the ratchet pawl to press it into engagement with the teeth of the ratchet wheel. The chain guard 100 of our device comprises preferably two members 101 spaced apart by means of a spacer 102 and held together centrally by means of a bolt 103. The ends of the members 101 are disposed in and held by suitable brackets 104 carried by the body plate 10.

As shown in the drawings the lower hook 105 of the hoist is carried by a swivel block 106 which is attached to the load chain 107 which passes up around the load wheel 35 in the usual manner and which has its free end carried by an anchor stud 108 secured to the inner face of the body plate 10 preferably by welding. Screwthreaded means 109 are preferably employed to hold the end link of the chain upon the stud.

Having thus described our invention, what we claim is:

A hoist comprising two spaced body plates of substantially flat material, a plurality of spacing studs welded permanently to said plates, a load wheel disposed between said body plates and formed integrally with a load shaft, said shaft having bearing portions, an anti-friction bearing for each shaft portion, each of said plates being formed with an opening for the support of said anti-friction bearings, the opening in one of said plates being large enough to permit the passage of said load wheel, the opening in the other plate being smaller than the load wheel but larger than the load shaft, a bushing permanently secured in the opening of the last mentioned plate to form a bearing for the adjacent end of the load shaft, a bearing ring bushing fitted into the opening of the first mentioned plate, said bushing having a slip fit in the engaged opening and formed with a flange for engagement with the outside surface of the plate to stop inward axial movement thereof, and readily removable means for securing said flange to said plate.

HUMPHREY F. PARKER.
KARL W. STINSON.