May 24, 1960 K. L. TREIBER 2,937,832

CARRYING DEVICE

Filed Aug. 22, 1958 2 Sheets-Sheet 1

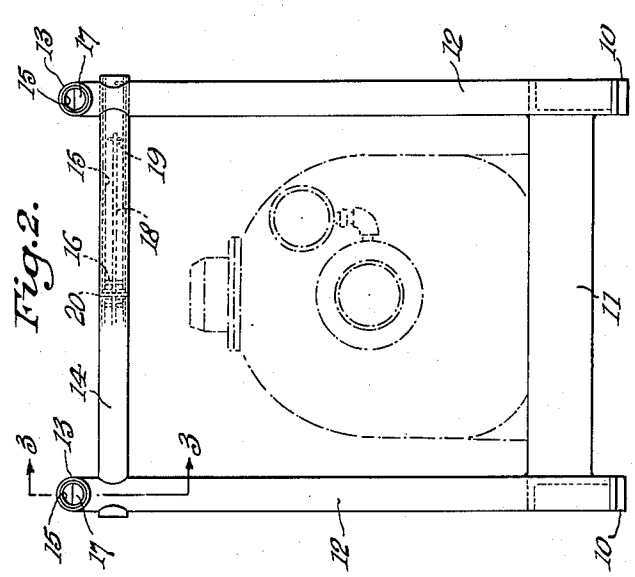


Fig. 2.

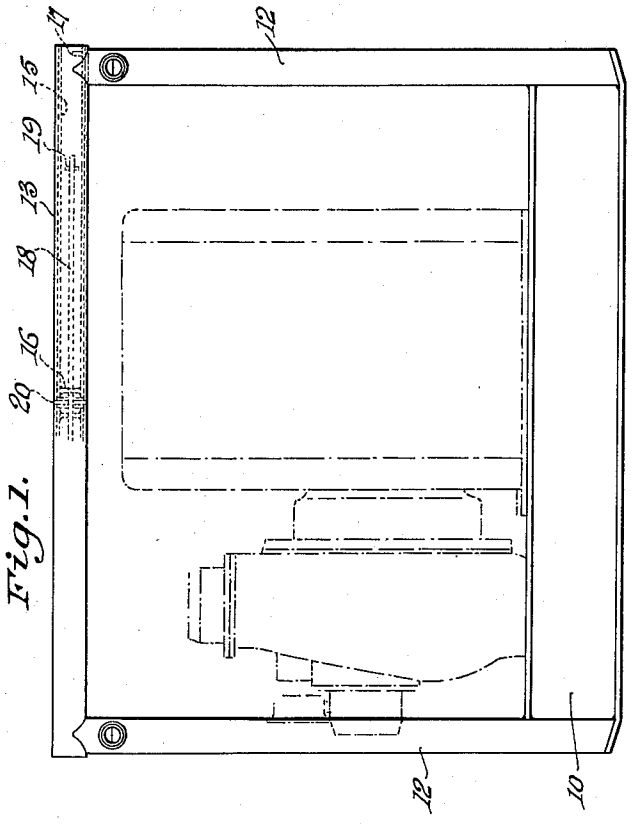


Fig. 1.

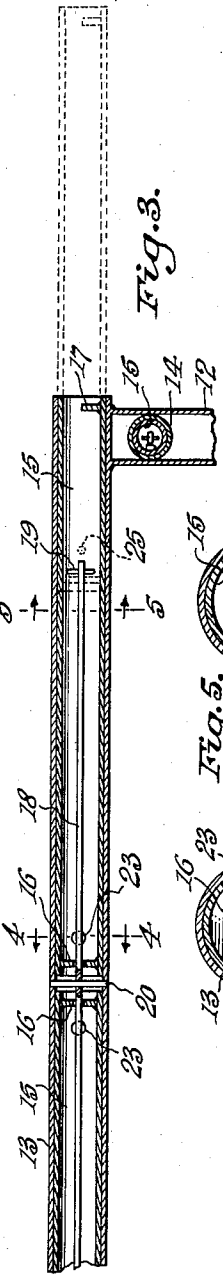


Fig. 3.

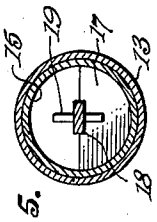


Fig. 5.

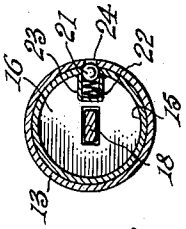


Fig. 4.

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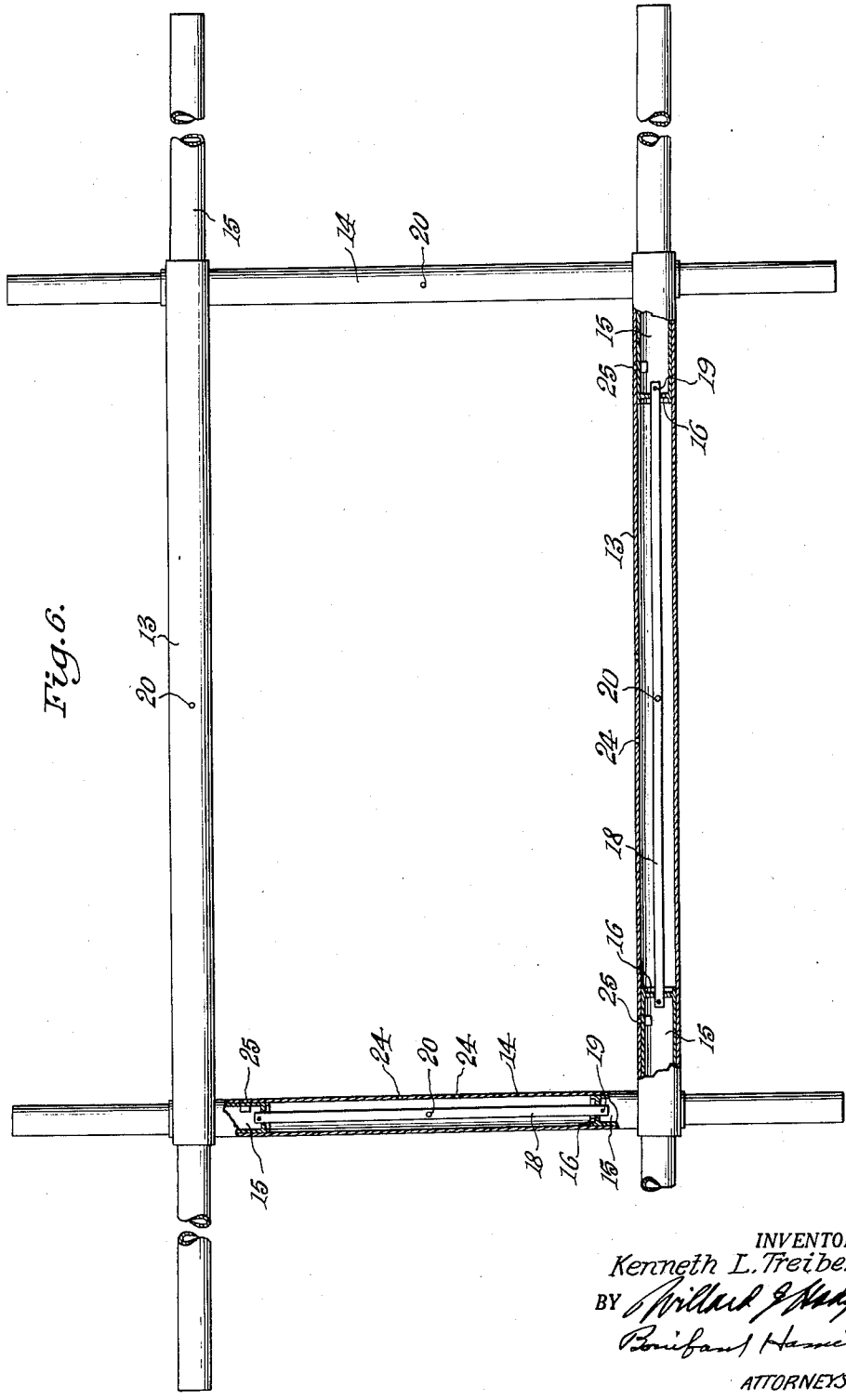


Fig. 6.

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2,937,832

CARRYING DEVICE

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6 Claims. (Cl. 248—19)

(Granted under Title 35, U.S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the Government for governmental purposes without payment of any royalty thereon.

This invention relates to a new and improved hand-carrying frame for heavy objects such as portable gasoline pumping units or electrical generating units.

In many field operations and particularly in combat engineering operations, it is necessary to operate a pumping unit or electrical generating unit in a location inaccessible to vehicles. Hand-carrying is then often a necessity and is always desirable for positioning such a unit. Since these units are usually heavy and relatively compact, it is difficult for the necessary large number of men to get a hold on the unit and still be in a position to lift and walk with the unit. Therefore, the principal object of this invention is to provide a carrying device having telescoping members which when extended are readily accessible to a large number of men for hand-carrying, but when not in use are retracted to form a compact out-of-the-way frame during operation of the unit.

Additional objects and advantages of the invention will be apparent from the following detailed description of the chosen embodiment and the accompanying drawings wherein—

Fig. 1 is a side elevation of a carrying device constructed in accordance with the invention showing by dot and dash lines the position of a portable pumping unit and by broken lines certain features of construction;

Fig. 2 is an end elevation of the device of Fig. 1;

Fig. 3 is a partial sectional view taken on line 3—3 of Fig. 3 showing features of construction, and showing by broken lines the extended position;

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

Fig. 5 is a sectional view taken on line 5—5 of Fig. 3; and

Fig. 6 is a top plan view of the device showing the eight telescoping members extended to carrying position and partially broken away to better show features of construction.

Referring to the drawings, a rigid rectangular box frame is formed by base channel rails **10**, base end rails **11**, upright tubular members **12**, longitudinal tubular members **13**, and transverse tubular members **14**. A suitable floor or frame is supported by base rails **10** and **11** for supporting the pumping unit. Longitudinal tubes **13** are welded in cradles in the top of upright tubes **12**, and transverse tubes **14** being of smaller diameter, pass through the upright tubes and are also welded in place. With this construction, both the longitudinal and transverse tubes have unobstructed inner passages, the advantages of which will be apparent from the following description.

Inserted in each of the longitudinal and transverse tubular members are a pair of oppositely extending telescoping inner tube members **15** which, when extended, provide the lifting bars for hand-carrying the unit. There are, therefore, eight telescoping tubes **15**, all being constructed substantially the same as that shown in Fig. 3 (dotted lines show extended position of tube **15**). A slotted stop disc **16** is rigidly mounted inside the inner end of tube **15**. Passing through the slot in stop disc **16** is a guide rail **18** which is rigidly positioned along the longitudinal axis of tube **13** by the rail support pin **20**, which in turn is rigidly attached to the outer tube **13**. A stop pin **19** on rail **18** abuts against stop disc **16** when the inner tube **15** is in extended position, thereby preventing the inner tube from disengaging the outer tube. A closed-end cylindrical tube **23** is mounted in the wall of the inner tube **15** and houses a spring **22** which biases a ball **21** outward. When the inner tube **15** is in retracted position, the ball **21** is aligned with hole **24** which is of smaller diameter than the ball. This arrangement of ball and hole provides a snap-lock device for holding the inner tube **15** in retracted position. When the tube **15** is in extended position the ball **21** is aligned with hole **25** thereby locking tube **15** in extended position. A half-disc **17** is mounted in the outer end of tube **15** to serve as a grip to exert the necessary force for unseating the snap-lock ball and extending inner tube **15**. It will be noted that guide rail **18** is rectangular in cross section and that the slot in the inner disc **16** is of complementary rectangular shape. This construction prevents inner tube **15** from twisting and assures that ball **21** and holes **24**, **25** will always be aligned, thereby allowing simple inexpensive holes to be used rather than expensive-to-machine circumferential receiving grooves which would also weaken the tubular member excessively. Another important advantage of the construction described above is that the rail and pin serve as a stop from within the inner tube rather than penetrating the inner or outer tube, providing a complete, unweakened circular contact between the inner tube and outer tube to take maximum advantage of the strength of a close-fitting telescoping joint.

Wherever practical, the carrying frame as above described is preferably made of aluminum alloy to reduce the weight of the device. The tubular construction described above provides a light-weight, relatively rigid protective framework about the unit, in addition to providing the required tensile strength for lifting the unit, by taking advantage of the high rigidity strength per unit weight inherent in tubular construction. The novel manner in which the upright, longitudinal, and transverse tubular members are interconnected utilizes tubular construction and at the same time provides free passageways in the horizontal members for the telescoping inner tubes.

When the pumping unit is being operated, the eight inner tubes remain in retracted position which results in a rectangular framework about the unit only slightly larger than the unit itself. With the inner tubes in this position, there are no projecting members to endanger the operating personnel. When it is desired to move the unit, the inner tube is extended by pulling on the half-disc **17** which unseats the snap-lock ball. The inner tube is extended until stop-disc **16** abuts stop-pin **19**, at which time the snap-lock ball again seats in hole **25**. The inner tube cannot be extended to the point that it disengages the outer tube, and the snap-lock device prevents the tube from sliding back into the outer tube. Of course, any number of tubes can be extended, and the tubes are so arranged that as many as eight men can conveniently lift the unit and still be in a position to walk.

I claim:

1. A carrying device comprising a rectangular base frame, a vertically disposed upright tubular member attached adjacent to each corner of said base frame, each of said upright tubular members having a passage there-

through in the transverse direction and a saddle at the upper end thereof aligned in the longitudinal direction, a plurality of horizontally disposed outer tubular members each received in and attached to the saddles of a pair of upright tubular members, and a plurality of horizontally disposed outer tubular members each received in and attached to the passages of a pair of upright tubular members, a pair of oppositely extending inner tubular members received in telescoping engagement with each of said outer tubular members, a disc rigidly attached inside and adjacent the inner end of each of said inner tubular members, said disc having a polygonal-shaped aperture therein, a rail of corresponding polygonal cross section for each inner tubular member connected to and disposed in each of said outer tubular members, said rail having a segment of enlarged cross section adjacent the outer end thereof, said rail passing through said polygonal-shaped aperture and cooperating therewith to prevent rotation of said disc, and said rail extending into said inner tubular member whereby said disc travels relative to said rail and abuts said enlarged segment when said inner tubular member is extended.

2. A carrying device as set out in claim 1 including a segment of a disc rigidly attached inside and adjacent to the outer end of said outer tubular members.

3. A carrying device comprising a substantially rectangular base frame, a vertically disposed upright member attached adjacent each corner of said base frame, each of said upright members having a passage therethrough in the transverse direction, a plurality of horizontally and transversely disposed outer tubular members each received in and attached to the passages of a pair of upright members, a plurality of horizontally and longitudinally disposed outer tubular members each connected to the top ends of a pair of upright members, a pair of oppositely extending inner tubular members received in telescoping engagement within each of said

outer tubular members, stop means on each of said inner tubular members cooperating with guide means in each of said outer tubular members to prevent disengagement of said inner tubular members from said outer tubular members, and releasable locking means for holding said inner tubular members in both extended and retracted positions.

4. A carrying device as set out in claim 3 wherein said upright members are tubular and wherein said horizontally and longitudinally disposed outer tubular members are received in and attached to saddles at the upper end of said upright members.

5. A carrying device as set out in claim 3 wherein said stop means is an apertured disc rigidly attached inside and adjacent the inner end of said inner tubular member and wherein said guide means is a rail rigidly connected to and disposed in said outer tubular member, said rail having a segment of enlarged cross section adjacent the outer end thereof, said rail being received in the aperture of said disc and extending into said inner tubular member whereby said disc travels relative to said rail and abuts said enlarged segment when said inner tubular member is extended.

6. The carrying device as set out in claim 5 wherein said releasable locking means comprises a spring biased ball carried by each of said inner tubular members and a plurality of receiving holes of smaller diameter than said ball in each of said outer tubular members.

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