June 11, 1929. J. W. DAOUST 1,717,194

GRAPPLE

Filed Jan. 31, 1928 3 Sheets-Sheet 1

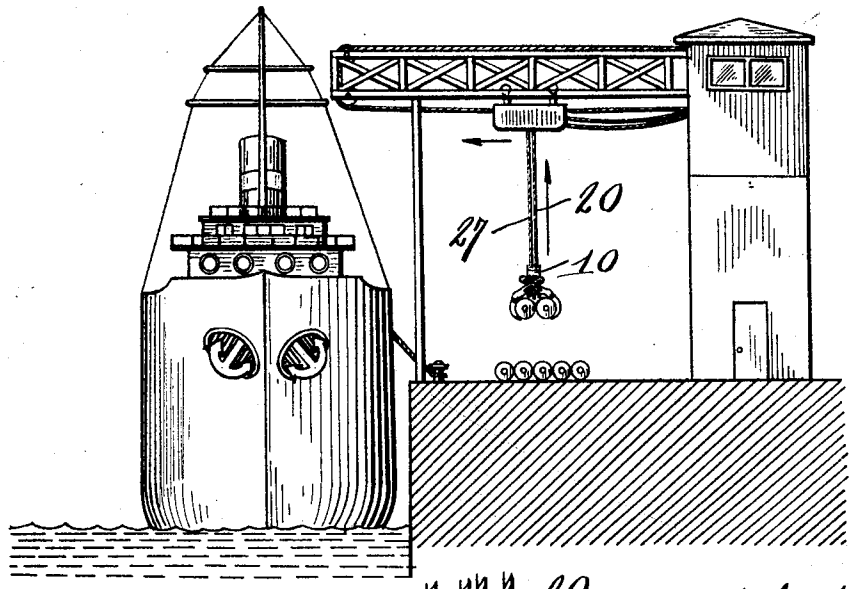


Fig. 1

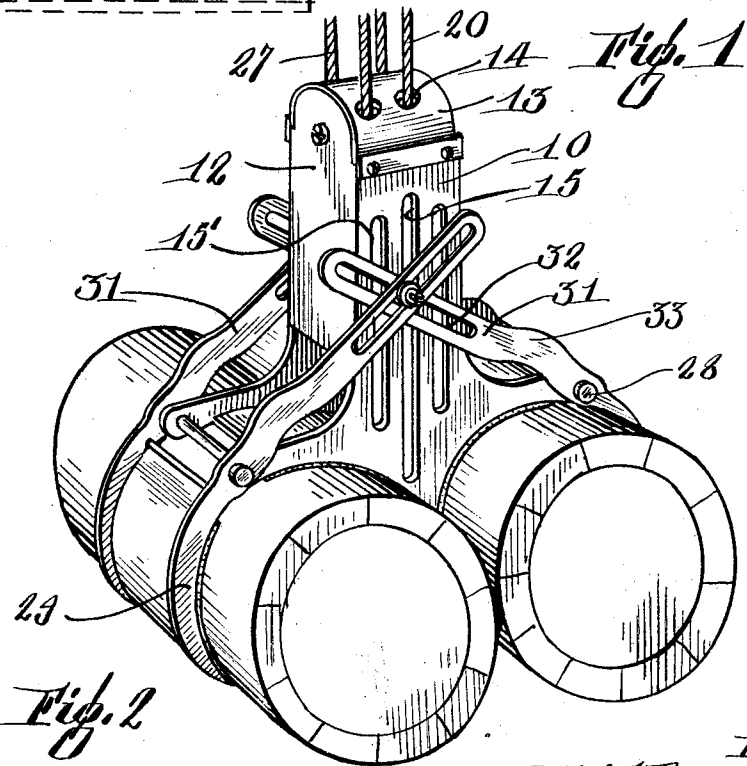


Fig. 2

Inventor

Joseph Wilfrid Daoust

By Marion & Marion

Attorneys

June 11, 1929. J. W. DAOUST 1,717,194

GRAPPLE

Filed Jan. 31, 1928 3 Sheets-Sheet 2

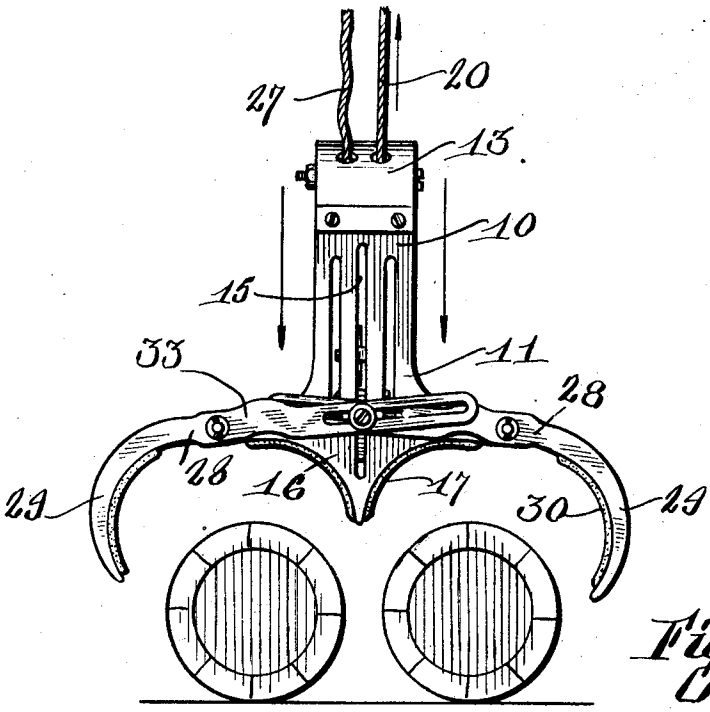


Fig. 3

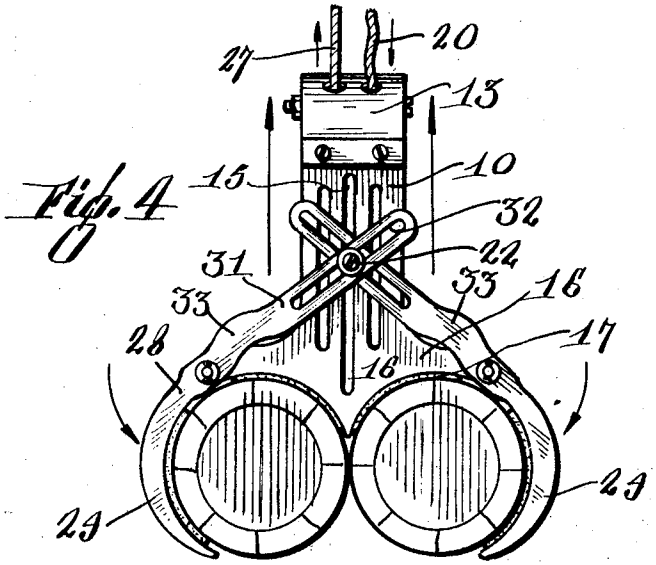


Fig. 4

Joseph Wilfrid Daoust Inventor

By Marion & Marion

Attorneys.

June 11, 1929. J. W. DAOUST 1,717,194

GRAPPLE

Filed Jan. 31, 1928 3 Sheets-Sheet 3

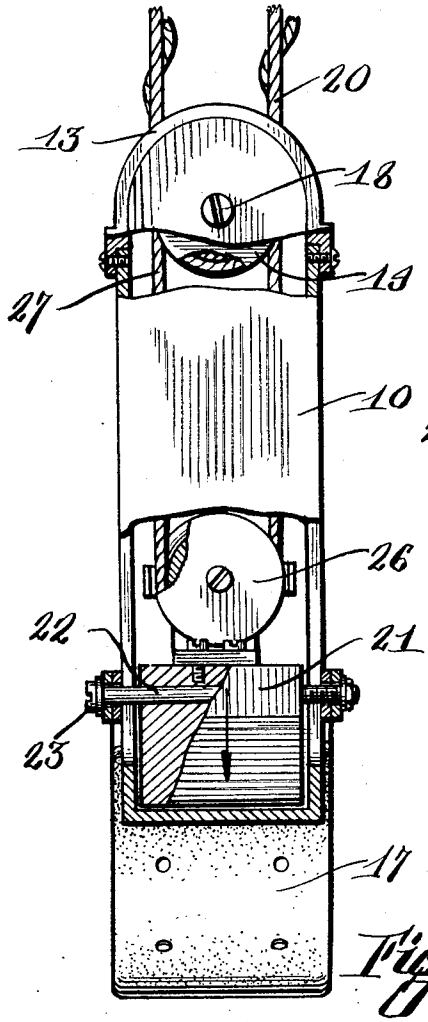


Fig. 5

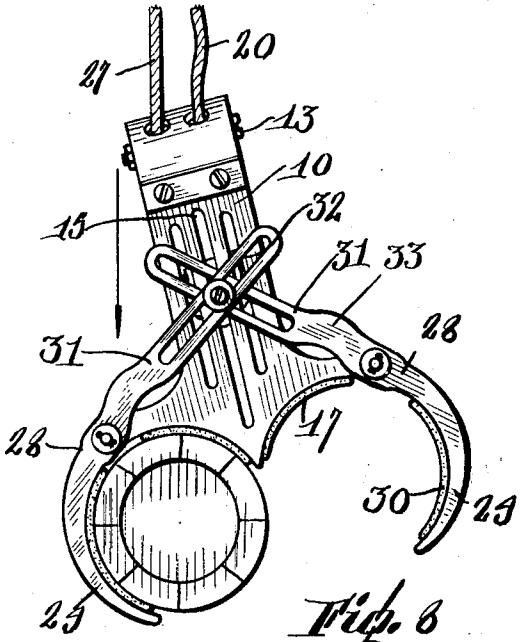


Fig. 6

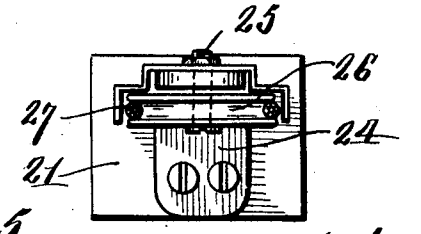


Fig. 7

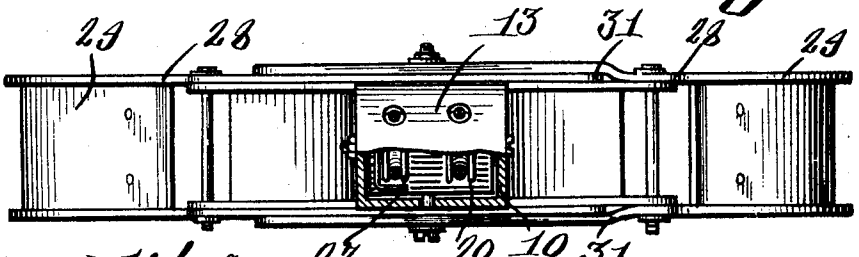


Fig. 8

Joseph Wilfrid Daoust Inventor

By Marion & Marion

Attorneys

Patented June 11, 1929. 1,717,194

UNITED STATES PATENT OFFICE.

JOSEPH WILFRID DAOUST, OF MONTREAL, QUEBEC, CANADA.

GRAPPLE.

Application filed January 31, 1928. Serial No. 250,873.

The present invention relates to improvements in grapples and has particualr reference to a grappling device for handling cylindrical objects particularly rolls of paper employed for newsprint and the like.

An important object of the invention is the provision of a grapple for handling paper rolls designed to securely engage the rolls without injury thereto.

A further object of the invention is to provide a grapple of the above character which can be quickly attached upon the rolls so as to expedite the transfer of the rolls on to or from a ship or other conveyance.

Still another object of the invention is the provision of a grappling device of the above type designed so that the grapples will automatically engage and release the rolls during the transferring operation.

Another object of the invention is the provision of a grappling device of the above character which will be relatively simple and durable of construction and efficient in use.

In handling paper rolls, to hoist the same aboard a ship or in removal therefrom, it is customary, under the present practice, to cut the ends of the wrapper concentrically about the central longitudinal bore and insert one or a pair of pipes or rods into the centre bore through the ends. The hoisting chain hooks are then positioned to engage the outer projecting ends of the rods and the rolls are thus individually transferred. This system of handling the rolls has been found defective due to the fact that the end edges of the bores are substantially crushed due to the relatively heavy weight of the rolls. Furthermore, the exterior peripheral edges are also usually damaged by the grapple chain so that a substantial portion of the paper is rendered unfit for use.

The present grappling device is designed to obviate these and other defects resulting from the present customary handling of the rolls so that a substantial saving in the paper contained in the rolls is effected.

Other objects and advantages of the invention will become apparent as the description progresses.

In the accompanying drawing forming a part of this specification and in which like reference characters are employed to designate corresponding parts throughout the same:

Figure 1 is an elevational view illustrating the application of the grapples in the transferring of the rolls from a loading pier on to a ship,

Figure 2 is a perspective view showing the grapple operatively connected with a pair of rolls,

Figure 3 is a side elevational view illustrating the position of the grapple immediately prior to the engagement of the rolls,

Figure 4 is a similar view showing the connection of the grapples with the rolls in hoisting position,

Figure 5 is a vertical transverse section through the grapple,

Figure 6 is a top plan view partly in section,

Figure 7 is a top plan view of a weight block adapted to automatically separate the movable grasping jaws of the grapple, and

Figure 8 is a side elevational view showing the grapple operatively engaged with a single roll.

Referring to the drawings, wherein for the purpose of illustration is shown a preferred embodiment of the invention, the numeral 10 generally designates the grapple body which is in the form of a vertically elongated hollow casing substantially rectangular in cross section. The casing is composed of a pair of complementary side plates 11 having the upper portions rigidly connected with elongated end plates 12 and the top enclosed by an arcuate cover plate 13. The cover plate is formed with a plurality of, in the present instance four, openings 14 communicating with the interior of the casing. The side plates 11 are formed with transversely opposed elongated slots embodying longitudinal centre slots 15 and side slots 15′.

The bottom portion of the body is formed with complementary transverse projections 16 having their lower portions formed in the contour of segmental arcs struck on a radius substantially equal to the radius of the paper rolls. The arcuate projections converge to a common tapered point and the bottom surfaces are lined with lining strips 17, preferably formed of leather or similar material adapted to provide a yieldable roll engaging surface.

Rotatably mounted in the upper portion of the casing on a fixed pivot 18 is a vertical pulley wheel 19 having its peripheral edge grooved to receive a hoisting cable 20.

Positioned within the vertical extension of the grapple body 10 and adapted for vertical sliding movement therein is a weight block

21, preferably formed of metal and having its upper portion formed of rectangular cross section. The lower portion is of tapered V-shaped form so as to engage the lower tapered portion of the body when the weight is suspended. Fixed transversely through the block 21 and formed so that the ends project through the central longitudinal slots 15 in the side of the body is a block pin 22 formed with a head 23 at one end while the opposed end is screw threaded. Formed integral with or secured on the top of the block 21 is an angular metallic bracket 24 having a bottom horizontal leg resting on the block and secured thereto and a vertical right angular leg forming a support for a pulley stub shaft 25. The shaft 25 is arranged in a horizontal position and supports thereon a vertical rotatable pulley 26 formed with a peripheral groove adapted to engage a hoisting cable 27.

Pivotally connected with the outer ends of the fixed jaws 16 and adapted to co-operate therewith to securely engage the rolls, are a pair of complementary jaws 28 embodying arcuate, relatively wide, roll engaging portions 29 also lined with leather strips 30 at their inner surfaces for engagement with the rolls. The gripping jaws 28 are also curved in an arc corresponding to the radius of the rolls and are arranged to engage the rolls at substantially diametrically opposed positions to that of the fixed jaws. Each of the pivoted jaws is formed with a pair of tangentially projecting opposed levers 31, the outer portions of which are formed with longitudinal slots 32 adapted to engage the lateral extensions of the block pin 22. The respective levers of the complementary jaws are arranged in crossed portions at each side of the grapple, as shown to advantage in Figures 2 and 4. The intermediate portion of each lever 31, is formed with an arcuate offset 33 designed to avoid contact of the levers with the rolls when the grapple is lowered to roll engaging position.

In operation, the paper rolls are to be normally arranged in parallel adjacent positions for loading. The cables 20 and 27 have their upper ends mounted in an overhead crane or similar hoisting device and preferably arranged so as to be elevated or lowered upon the manipulation of a control lever. When the grapple is lowered to roll engaging position it is suspended from the cable 20 trained over the stationary pulley 19. In this position, the cable 27 is hung loosely from the crane and the weight block 21 slides to a lowered position in the bottom of the grapple casing. As the weight block is lowered the crossed levers 31 are swung downwardly so that the outer swinging gripping portions of the jaws 28 are in elevated, transversely separated positions. As the grapple is brought to rest upon a pair of rolls, the bottom tapered end of the casing is wedged between the pair of rolls to be elevated and the fixed jaws formed on the body rest upon the inner arcuate portions of the rolls. The cable 20 is then released and the complementary cable 27 elevated so as to raise the weight block 21 and swing the pivoted jaws 28 to gripping position about the outer portions of the rolls. The grapple and rolls are then elevated and swung on to the ship or other conveyance. When the rolls carried by the grapple are positioned on the floor of a vehicle the hoisting cable 27 is loosened to permit the weight 21 to drop to the bottom of the casing to release the movable jaws, and the grapple is again elevated through the medium of the cable 20.

With the foregoing mechanism, the rolls can be transferred more quickly and efficiently without danger of damaging the paper forming the roll. The fixed jaws of the body and the movable jaws are of relatively wide construction so as to engage a relatively large area of the roll to obviate the formation of indentations in the outer surfaces of the paper.

It is to be understood that the form of my invention herein shown and described is to be taken as a preferred example of the same, and that various changes as to the shape, size, and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, I claim:—

1. A device of the character described comprising a rigid body, arms extended laterally from said body adjacent the lower portion thereof, a pair of article engaging jaws pivoted to the said arms and having elongated slots in one end thereof, a rod slidable in an aperture provided in the body and extending through the slots of the respective jaws, means for keeping the jaws in a normally open position, and flexible means associated with the body for actuating the jaws to either article engaging or releasing position.

2. A device of the character described comprising a rigid body, cable means connected with the top of the body for selectively transferring the same, a pair of fixed jaws formed in transversely opposed positions at the lower portion of the body provided with arcuate article engaging surfaces, a pair of adjustable jaws pivotally connected with the outer ends of the fixed jaws having outer arcuate portions adjustable to article engaging position, and means whereby the said adjustable jaws can be automatically separated in article releasing position and selectively actuated to closed article gripping position.

3. A grapple of the character described comprising a hollow vertically elongated body, transverse extensions formed at the lower portion of the body having their lower portions formed arcuately to provide fixed article gripping jaws, a pair of adjustable

jaws pivotally connected with the body having outer arcuately formed gripping portions engageable with an article to grip the same, levers formed integral with said adjustable jaws and adapted to assume crossed positions at the sides of the body, means engageable with said levers for actuating the adjustable jaws to article engaging or releasing positions, and means for selectively operating the said levers and jaws attached thereto.

4. A grapple of the character described comprising a hollow vertically elongated body, transverse extensions formed at the lower portion of the body having their lower portions formed arcuately to provide fixed article gripping jaws, a pair of adjustable jaws pivotally connected with the body having outer arcuately formed gripping portions engageable with an article to grip the same, levers formed integral with said adjustable jaws and adapted to assume crossed positions at the sides of the body, means engageable with said levers for actuating the adjustable jaws to article engaging or releasing positions, means for selectively operating the said levers and jaws attached thereto, said means including a weighted block slidably mounted in a vertical portion of the body having projections engageable with the levers, and a cable operatively connected with said block for controlling movement of the same.

5. A grapple for handling paper rolls including a body of hollow vertically elongated form, a pair of transverse outwardly directed extensions formed at the lower end of the body, the lower edges of said extensions being of arcuate curvature and carrying article gripping pads to provide fixed jaws, a pair of adjustable jaws pivotally connected with the outer ends of the body projections having arcuate roll gripping portions at their outer ends engageable with the roll and adapted to firmly grip the same, inwardly projecting levers projecting from each side of each adjustable jaw adapted to project in crossed position at each side of the body and provided with longitudinal slots therein, a weighted block mounted for vertical sliding movement in the body adapted to separate the jaws when released, projections extending transversely from the said block through the casing and engageable with the levers to actuate the jaws, a cable operatively connected with the said weighted block for controlling the position of the movable jaws, and a second cable attached to the upper portion of the body for supporting the grapple when the jaws are separated.

In witness whereof I have hereunto set my hand.

JOSEPH WILFRID DAOUST.