

No. 652,798.

Patented July 3, 1900.

S. MATTSON.
WINCH HEAD.

(Application filed Mar. 23, 1898. Renewed June 3, 1899.)

(No Model.)

2 Sheets—Sheet 1.

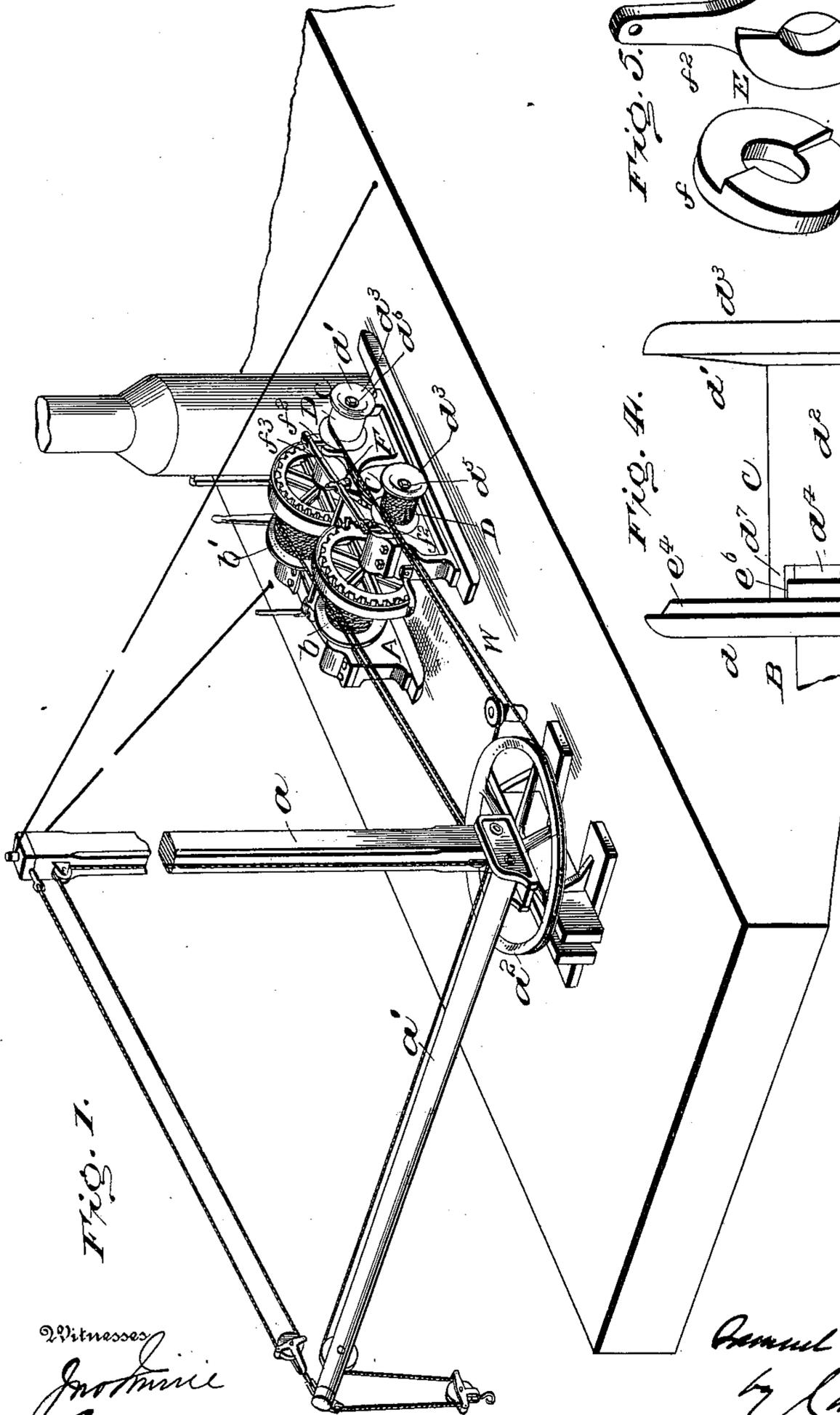


FIG. 1.

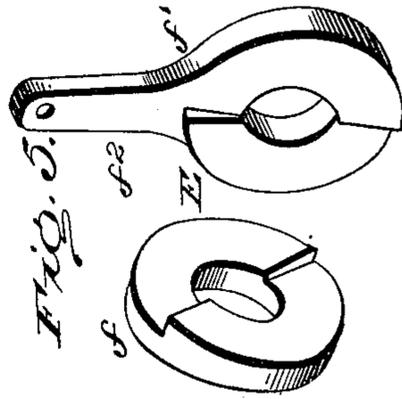


FIG. 5.

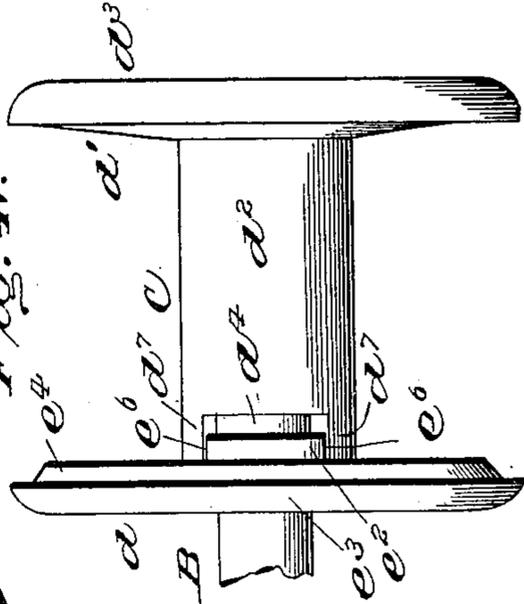


FIG. 4.

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Fig. 2.

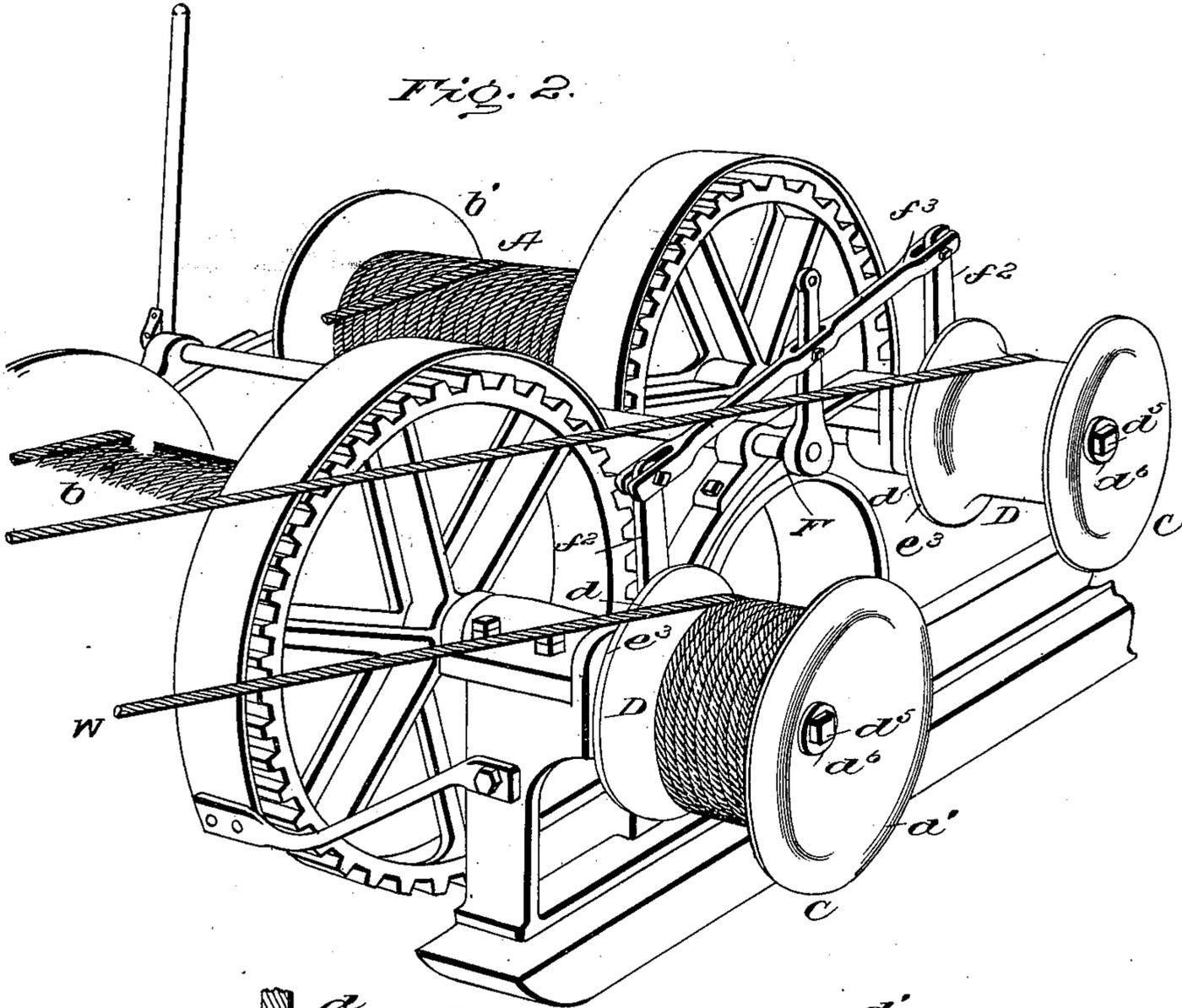
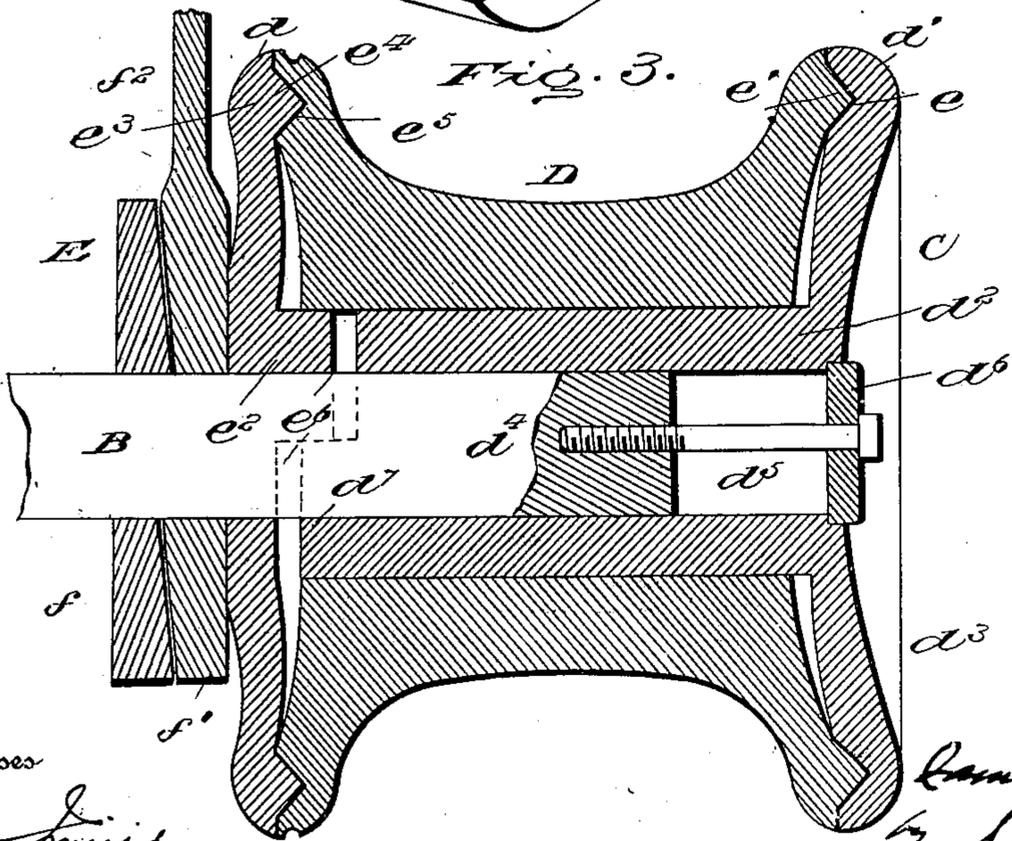


Fig. 3.



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UNITED STATES PATENT OFFICE.

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WINCH-HEAD.

SPECIFICATION forming part of Letters Patent No. 652,798, dated July 3, 1900.

Application filed March 23, 1898. Renewed June 3, 1899. Serial No. 719,304. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL MATTSON, of New York, (Brooklyn,) in the county of Kings and State of New York, have invented certain new and useful Improvements in Winch-Heads; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention contemplates certain new and useful improvements in winch-heads for hoisting-engines, and is especially applicable when such engines are used on boats in the prosecution of the building of bridge-piers, caisson-work, and the like. In this class of work the hoisting-derrick is provided with an approximately horizontally disposed arm, commonly called a "boom," which is constantly swung in the operation of the derrick from side to side by the turning of the mast by which it is supported. It frequently happens, especially in rough water, that great difficulty is experienced in controlling the boom, which under its own or increased weight will move farther than desired, the rocking of the boat preventing the mast from maintaining a truly-perpendicular position. The turning of the mast and boom is ordinarily effected by a rope or chain passed around a bull-wheel keyed on the mast and connected at its ends to suitable machinery independent of the hoisting apparatus. By my invention this rope is connected at its ends to two winch-heads, commonly called "nigger-heads," mounted directly on the shafts of the hoisting-drums. These heads are so arranged that as one is tightened, so as to be operated by the revolution of the drum-shaft, the other head will be loose and free to turn independent of its shaft. Hence as the bull-wheel rope is being wound on one head it is unwound from the other. This I accomplish by making each of the heads in sections, that part which is capable of being revolved independent of the shaft being the one on which the rope is wound. The other part or parts are made to revolve with the shaft. A suitable clutch is provided for each head, and these clutches are so connected that as one of them throws the parts of one winch-head into fric-

tional contact with one another, causing all to revolve in unison, the other head will be loosened, so that the part or section thereof to which the rope is attached can unwind the latter independent of any movement of the shaft upon which it is mounted.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a view showing the general outline of a hoisting apparatus and derrick. Fig. 2 is an enlarged view of part of the hoisting apparatus, showing more clearly my improvements. Fig. 3 is an enlarged vertical sectional view taken through one of the winch-heads. Fig. 4 is an elevation of one of the latter. Fig. 5 shows one of the clutches.

Referring to the drawings, A designates a hoisting apparatus; a , a mast; a' , a boom extending from said mast, and a^2 a bull-wheel keyed on mast a .

The hoisting apparatus A is provided with two drums $b b'$, which may be operated in any suitable manner in accordance with well-known forms of construction. Hence further reference to the construction of this apparatus is unnecessary, save so far as to make clear the features of my invention. On the extended end of the shaft B of each drum is placed a winch-head C. To these winch-heads are connected the ends of a rope W, which is passed around the bull-wheel a^2 and by which the mast a is capable of being rotated. Each winch-head consists of a central part or section D and two end parts or sections $d d'$. The former, D, has an annular concavity to accommodate the rope W and is normally loose, while the parts or sections $d d'$ are interlocked and held to their shaft, so that they constantly revolve therewith, and one of them is capable of being so moved on said shaft as to bind all three parts or sections in frictional contact. The part or section d' consists of a hub or sleeve d^2 and an outer circular flange d^3 . This section is held firmly on shaft B by an extension d^4 thereof, a bolt d^5 , and a washer d^6 . The inner end of this sleeve d^2 has two opposite cut-aways, forming two prongs or extensions d^7 . On the inner face of the flange d^3 near the periphery thereof, is formed an

annular V-shaped groove e , designed to conform with and accommodate an annular V-shaped rib e' , formed on the outer side of the central part or section D. The part or section d consists of a central hub or sleeve e^2 and a circular flange e^3 , the latter being formed near its periphery with an annular V-shaped rib e^4 , which is designed to project into and snugly fit a corresponding groove e^5 in the adjoining face or end of section D. The end of hub or sleeve e^2 is also provided with opposite cut-aways e^6 , which accommodate the extensions d^7 of the sleeve of section d' . This latter section being fast to shaft D and its sleeve being in engagement with the sleeve of the part d , both are caused to revolve in unison with said shaft. The cut-away portions in the sleeves d^2 and e^2 are of such depth as to permit the section d to have a limited sliding movement on shaft B without being disengaged from the sleeve of the section d' . On the shaft B of each of the drums of the hoisting apparatus is placed a clutch E, the same consisting of two collars $f f'$, the former being stationary and the latter loose, both having concentric openings to accommodate shaft B. The inner opposed faces of these collars have cam-like inclinations, whereby by moving the collar f' , so that the opposed faces of the two collars will force it outward against the adjoining face of the section d of the winch-head, said section will be moved so as to bind in frictional contact the three sections of the head. It will be understood that the inclinations of the collars of one clutch are the reverse of those of the collars of the other clutch. From each of the collars f' projects an arm f^2 . These arms of the two clutches are connected together by a bar f^3 , and with the center of the latter engages an operating-lever F. The clutches are so arranged that when one of them forces the parts or sections of the adjoining winch-head into frictional engagement with one another the other clutch will release the sections of the other winch-head, thereby allowing the rope or central section D to rotate independently of the shaft B, as well as of the other parts or sections of the head.

From what has been said it will be seen that by means of my invention the mast of a derrick can be readily and easily turned and the boom carried thereby may be held at any desired point.

While I have specified the winch-heads as being so constructed and arranged that as one

is having the rope wound thereon the rope is being unwound from the other, yet by so moving the operating-lever and holding it at an intermediate point both winch-heads may be so loosened as not to cause the rope-sections to rotate with their respective shafts.

I claim as my invention—

1. The combination with a hoisting apparatus having two drums, of a winch-head on the shaft of each of said drums, means for throwing each of said winch-heads into and out of gear with its respective shaft, and connections between said means, whereby as one winch-head is thrown into gear, the other is thrown out of gear, substantially as set forth.

2. The combination with a hoisting apparatus having two drums, of a winch-head mounted on the shaft of each drum, each of said winch-heads being composed of sections, one of which is fast to its shaft, a movable rotary collar on each shaft designed to bind said sections together, and connections between said collars, whereby they will be operated together, substantially as set forth.

3. The combination with the shaft of a hoisting apparatus, of a winch-head consisting of two end sections having elongated hubs connected together so that one of said sections may be moved longitudinally on said shaft, the other end section and its hub being fast to said shaft, an intermediate section interposed between said end sections, and means for binding said sections together, substantially as set forth.

4. The combination with the shaft of a hoisting apparatus, of a winch-head consisting of an outer part or section having a circular flange and a hub or sleeve fast on said shaft and formed with cut-away portions, an inner part or section having a circular flange and a hub or sleeve having extensions designed to fit in said cut-away portions of said former sleeve, and a central section fitted on said sleeves and having an annular concavity, the opposed faces of said parts or sections having interlocking grooves and projecting portions, and means for binding said parts or sections together, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

SAMUEL MATTSON.

Witnesses:

FRANK H. PHILLIPS,
EDWARD GROTECLOSS.