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PATENTED FEB. 10, 1903.

T. H. PATENALL,
HIGH SPEED TRAIN STAFF CRANE.

APPLICATION FILED APR. 18, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

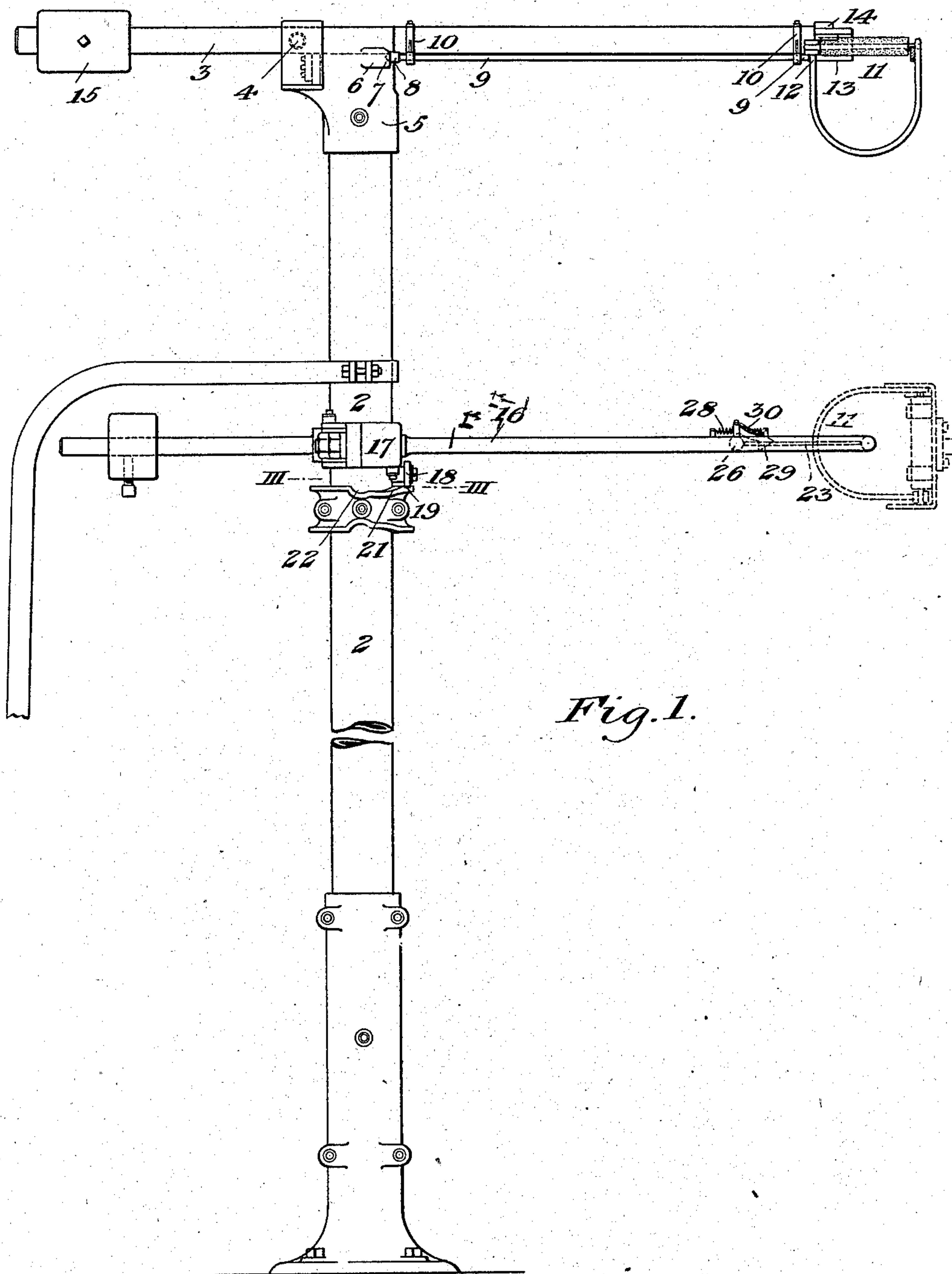


Fig. 1.

WITNESSES

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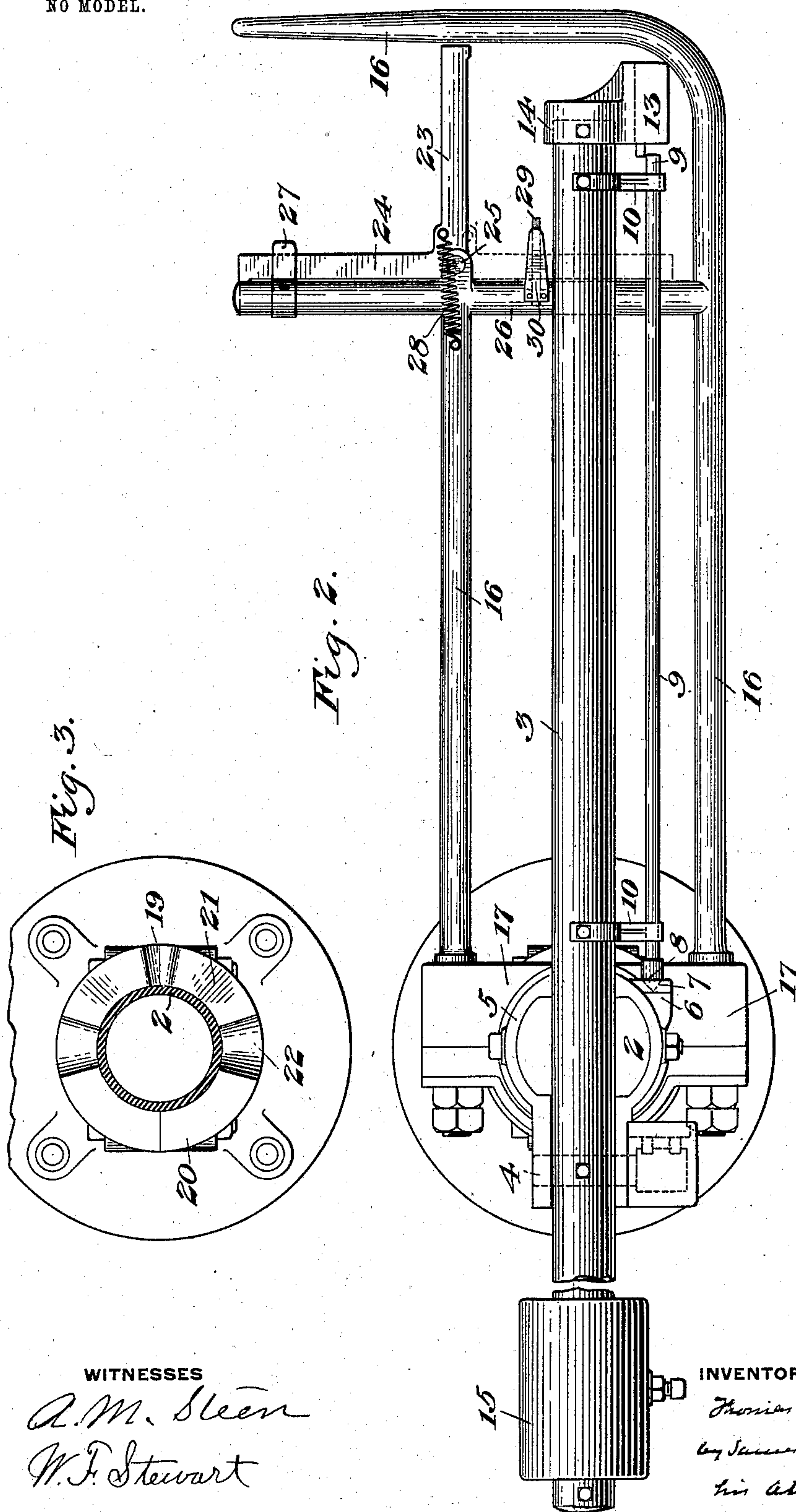
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2 SHEETS—SHEET 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

THOMAS H. PATENALL, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR TO
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HIGH-SPEED-TRAIN STAFF-CRANE.

SPECIFICATION forming part of Letters Patent No. 720,059, dated February 10, 1903.

Application filed April 18, 1902. Serial No. 103,538. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. PATENALL, of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful High-Speed-Train Staff-Crane, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation view showing a staff-crane constructed in accordance with my invention, the same being in the position they assume when receiving and delivering a ring, pouch, and staff. Fig. 2 is a plan view thereof, the parts being in the same position as in Fig. 1; and Fig. 3 is a horizontal section on the line III III of Fig. 1.

My invention relates to that class of cranes which are employed in high-speed-train staff systems for the receipt of the ring, pouch, and staff from and delivery to moving railway-trains, this system being that in which by the removal of a staff from a locking device and the delivery of the staff to the engineer of a train another staff cannot be taken out of the locking devices until the one already out has been replaced in one of the locking devices controlling this section of track.

This invention is designed to enable trains running at high speed to deliver and receive the ring and pouch carrying the staff without injury to the ring, pouch, or staff or liability to miss in receipt of the same or in delivering it at the proper point to the moving train, this being essential to the practical and successful operation of a high-speed-train staff system.

My invention consists in providing at suitable intervals and conveniently located at the side of the railway-track a crane having delivering and catching arms adapted to hold for delivery to a train and to retain when delivered from a moving train a ring, pouch, and staff, and further consists in providing mechanism on the arms which accomplishes this result and devices which permit the arms to be moved automatically out of operative position, so that no obstruction is offered to moving trains.

It further consists in certain features of construction and combination of parts more fully hereinafter described, and pointed out in the claims.

In the drawings, 2 represents a post or standard having a base secured to a suitable foundation, and at or near its top is pivotally secured a delivery-arm 3, the pivot 4 being carried by a casting 5, which is bolted or otherwise secured at or near the top of the post or standard 2. A boss or lug 6 upon this casting is provided with a cone-shaped socket 7 and receives the cone-shaped end 8 of a locking-rod 9, which is mounted in suitable guides 10 on the arm 3. The rod 9, having the cone-shaped end 8, is held in locked engagement with the socket 7 by the ring, pouch, and staff 11. The ring, pouch, and staff 11 is held in the position shown in Fig. 1 at the end of the arm 3, and one leg of the U-shaped frame of the ring 12 is confined between the outer end of the rod 9 and the lugs 13 of a casting 14, secured to the end of the arm 3 and properly shaped to engage and hold the staff, ring, and pouch 11. The ring, pouch, and staff is adapted to be removed by the catcher on the engine, or other part of the moving train, and the arm 3 is provided at its other end with a counterweight 15, and when the ring, pouch, and staff is removed, the rod 9 being released, the counterweight 15 causes the arm 3 to assume a vertical or nearly-vertical position, the cone-shaped end 8 of the rod 9 sliding out of the socket 7 by the action of the weight or similar device. The catching arm or lever 16 is provided with collar 17, having a roller 18, and is held in proper position to receive a ring, pouch, and staff from a moving train by a depression 19, Fig. 3, formed in collar 20, secured to the standard. The roller 18 permits the arm 16 to move radially about ninety degrees under the impetus given to the arm as the ring, pouch, and staff 11 is delivered to it from the moving train, the roller 18 rolling upon the inclined track portion 21, which terminates in a deeper depression 22, in which the roller is retained when the arm 16 is swung around.

In order to prevent the possibility of the ring, pouch, and staff from rebounding from the receiving end of the arm 16, I secure a

right-angled lever having arms 23 and 24, pivoted at 25 to an extension 26, which is parallel or substantially parallel to the receiving end of arm 16. The arm 23 is engaged by the ring, pouch, and staff as it is delivered to the arm 16, and as it strikes the arm 23 it turns it upon its pivot 25 and disengages the arm 24 from the spring-clip 27, secured to the extension 26. A spiral spring 28 is secured to the arm 23 in such a position that when the right-angled lever of which this arm forms a part is engaged the spring 28 will assist in turning the angled lever. A spring-pressed catch 29 is pivoted to the arm 24 and is held in a depressed position by a suitable leaf-spring 30.

I will now describe the operation of my device in delivering a ring, pouch, and staff to a moving train which is provided with a suitable catcher. The ring, pouch, and staff is placed in the position shown in Fig. 1, at the outer end of the delivering-arm 3, with the U-shaped portion of the ring in position to be engaged by the catcher on the train, preferably located on the engine-tender. One branch of the U-shaped ring, pouch, and staff engages the end of the locking-bar and holds it in the conical depression 7, and thus maintains the arm 3 in horizontal or delivery position. The lugs on the end of the casting 14 support the ring, pouch, and staff by engaging the sheath or pouch 31, in which the staff is incased, and as the lugs which support it permit the ready withdrawal of the ring, pouch, and staff 11 when engaged by the catching device on the train the locking-arm 8 is forced out of engagement with the retaining-socket 7 by the action of the counterweight on the opposite end of the arm 3. The counterweight in dropping causes the arm to assume an upright position, and when in this position it is out of the way.

The operation of the crane in catching a ring, pouch, and staff as it is delivered by the train to the crane at the staff-stations is as follows: A ring, pouch, and staff 11 is placed in a suitable holder, preferably located on the engine-tender, and the arm 16 having been previously set in position to catch the ring, pouch, and staff when the engine passes the catcher, the arm 16 being held there by the roller 18, resting in the slight depression 19, the arm 16 remains in this position until the end of the arm passes within the ring, pouch, and staff, and the arm is given momentum by the delivery of the ring, pouch, and staff by the train, when the roller 18 is forced out of the slight depression 19 and moves with the arm 16, around the standard 2, downwardly until it finally rests in the deeper depression 22 in the collar 21, secured to the standard 2. This deep depression 22 is preferably arranged about ninety degrees from the receiving position, and when the roller 18 is in the depression 22 the arm 16 occupies a position which is not in the way

or likely to be injured by passing trains. The angled lever and catch 23 and 24 at the end of the catching-arm 16 being struck by the ring, pouch, and staff as it is received on the arm 16 makes a quarter-revolution and, locking itself automatically, prevents the rebound of the ring, pouch, and staff due to the impact with which it strikes the arm 16.

The advantages of my invention will be apparent to those skilled in the art, since I am enabled by my construction to provide a crane that meets the requirements of the service in which it forms an important factor and without the danger of disarrangement which a more complicated device would render liable to occur. It is not in the way when not in use and is automatically turned into its inoperative position by the moving train.

Many changes may be made in the form and arrangement of parts by the skilled mechanic without departing from the spirit and scope of my invention, since

I claim—

1. In a high-speed-train staff system, a crane, comprising a standard, a delivery-arm pivotally mounted thereto, said arm having holding devices, a ring adapted to carry a pouch and staff and a detent, controlled by said ring, whereby the arm is held in position to deliver the same to a moving train; substantially as described.

2. In a high-speed-train staff system, a crane comprising a delivery-arm pivotally mounted thereon, said arm having holding devices, a ring adapted to carry a pouch and staff and a detent engaged by said ring, whereby the arm is held in position to deliver the same to a moving train; substantially as described.

3. In a high-speed-train staff system, a crane comprising a standard, a vertically-movable delivery-arm pivotally mounted thereon, said arm having ring, pouch and staff holding devices, a detent controlled by said ring, pouch and staff, whereby the arm is held in position to deliver the same to a moving train; substantially as described.

4. In a high-speed-train staff system, a crane comprising a standard, a catching-arm, devices on said arm arranged to engage a ring, adapted to carry a pouch and staff carried by a moving train, and mechanism mounted on the catching-arm whereby said ring is retained when received thereon; substantially as described.

5. In a high-speed-train staff system, a crane, comprising a standard, a radially-movable catching-arm, a detent whereby said arm is held in operative position to receive a ring, adapted to carry a pouch and staff, and devices on said arm arranged to be engaged by said ring, and adapted to automatically lock the same upon the arm when received from a moving train; substantially as described.

6. In a high-speed-train staff system, a

crane, comprising a standard, delivery and catching arms secured thereto, said delivery-arm being provided with a ring, having pouch and staff holding devices, devices for holding said ring, said catching-arm being provided with devices mounted thereon, adapted to receive and retain a ring delivered thereto from a moving train; substantially as described.

7. In a high-speed-train staff system, a crane, comprising a standard, a vertically-movable delivery-arm and a catching-arm secured thereto, said delivery-arm being provided with a ring adapted to carry pouch and staff holding devices controlled by said ring, whereby the delivery-arm is locked and released, and said catching-arm being provided with devices to receive and retain a ring de-

livered thereto from a moving train; substantially as described.

8. In a high-speed-train staff system, a crane, comprising a standard, a vertically-movable delivery-arm, and a radially-movable catching-arm secured thereto, said delivery-arm being provided with holding devices adapted to carry a ring, pouch and staff, and said catching-arm being provided with devices to receive and retain a ring delivered thereto from a moving train; substantially as described.

In testimony whereof I have hereunto set my hand.

THOMAS H. PATENALL.

Witnesses:

W. L. MCDANIEL,
JNO. M. LINDSAY.