No. 784,406. PATENTED MAR. 7, 1905.

H. T. KRAKAU & L. A. CONNER, Jr.

DRAFT RIGGING.

APPLICATION FILED JUNE 3, 1902. RENEWED JAN. 13, 1903.

3 SHEETS—SHEET 1.

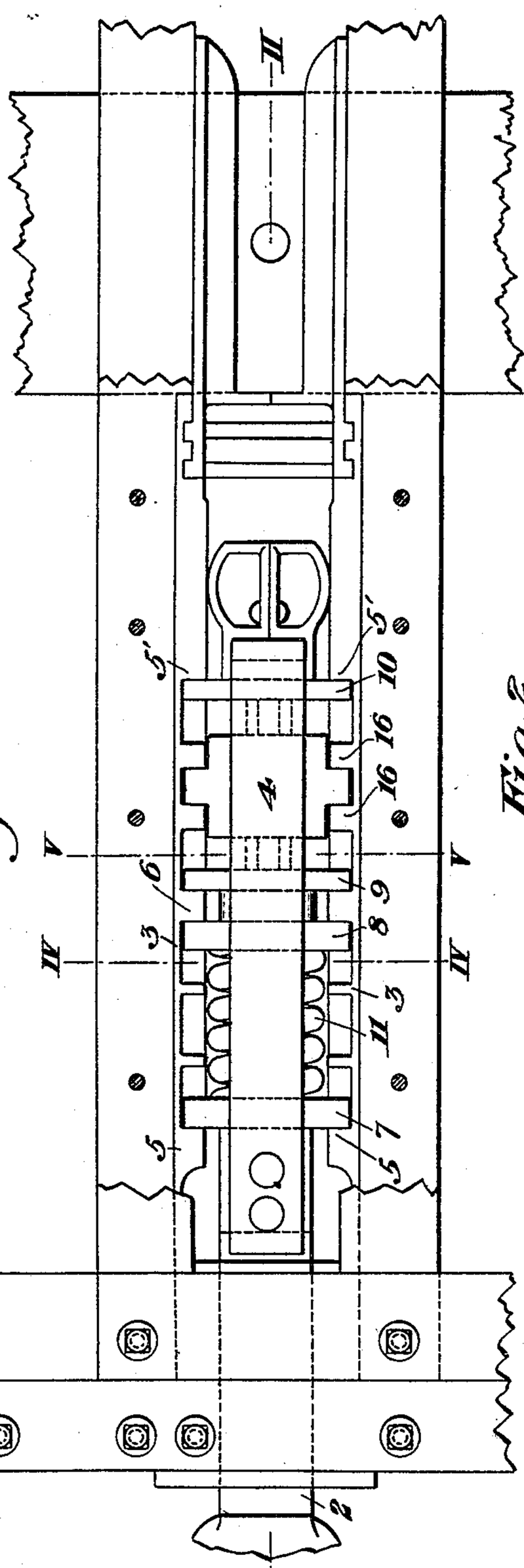

Fig. 1.

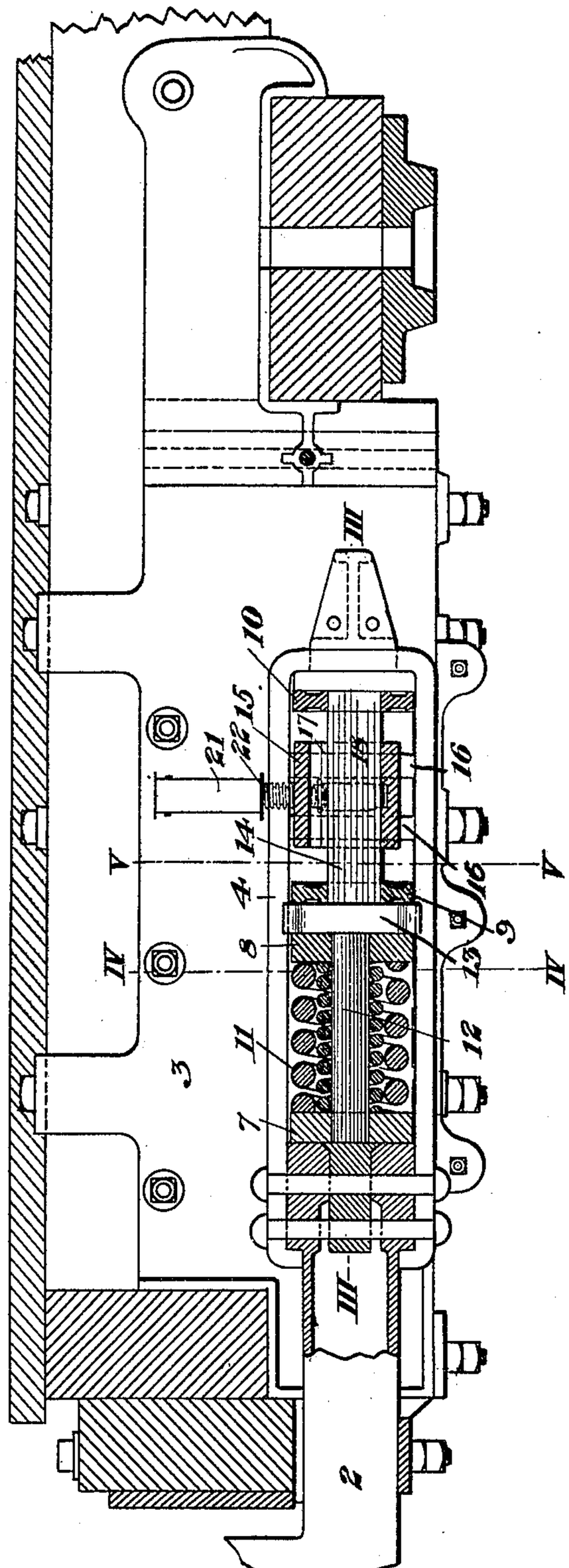

Fig. 2.

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3 SHEETS—SHEET 2.

Fig. 5.

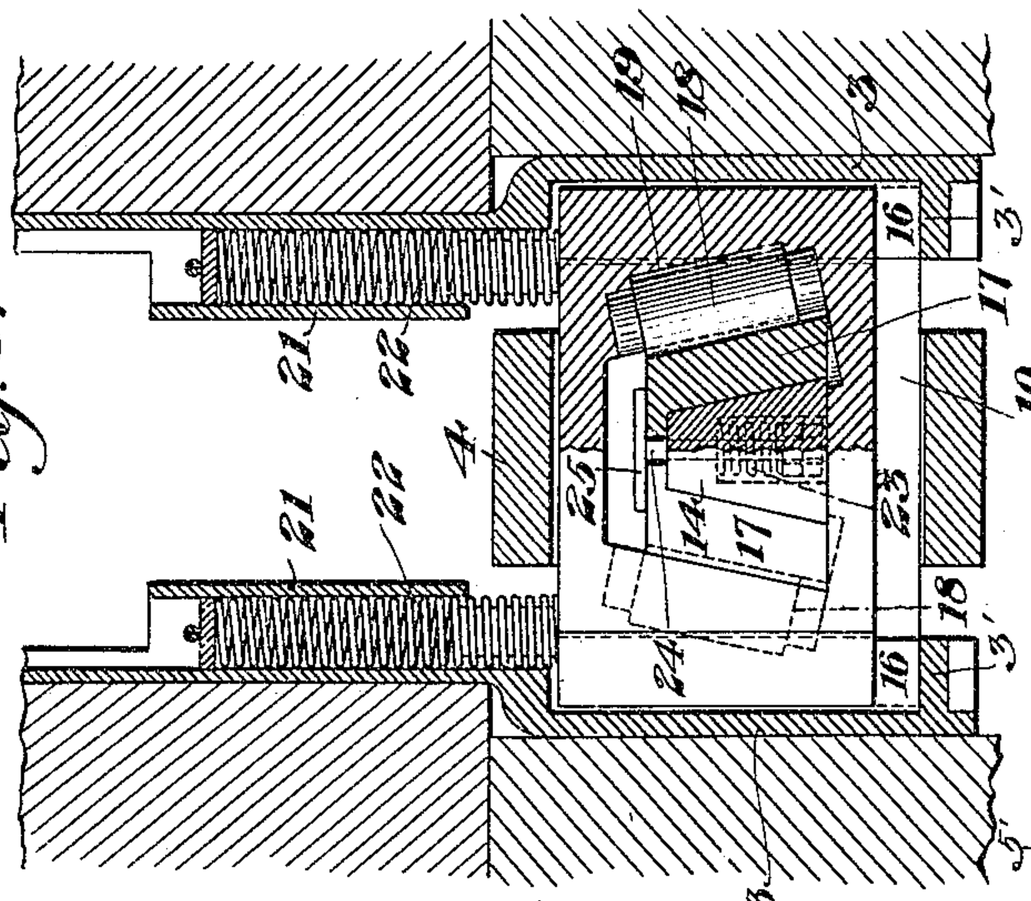


Fig. 6.

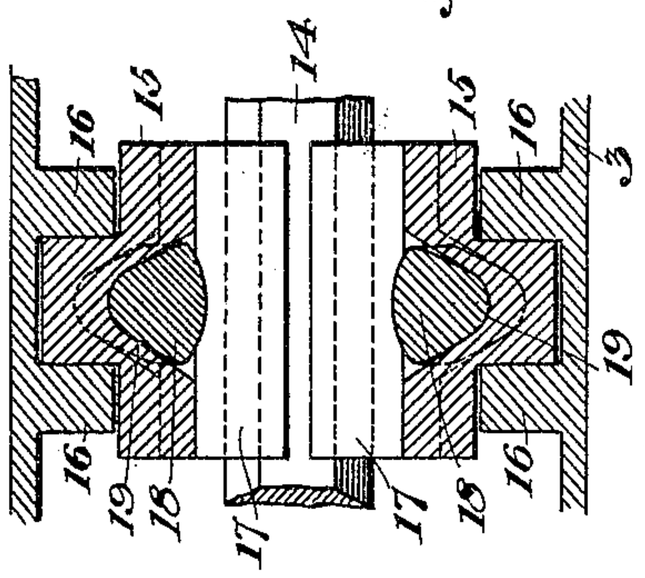


Fig. 4.

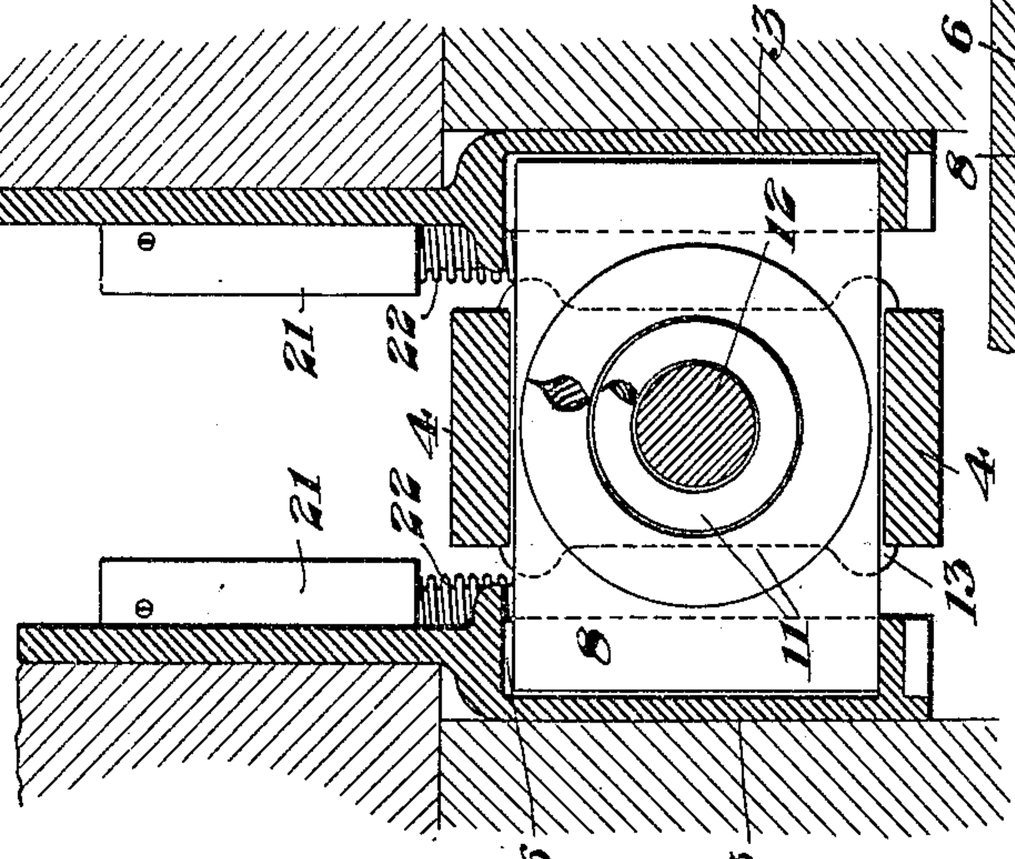
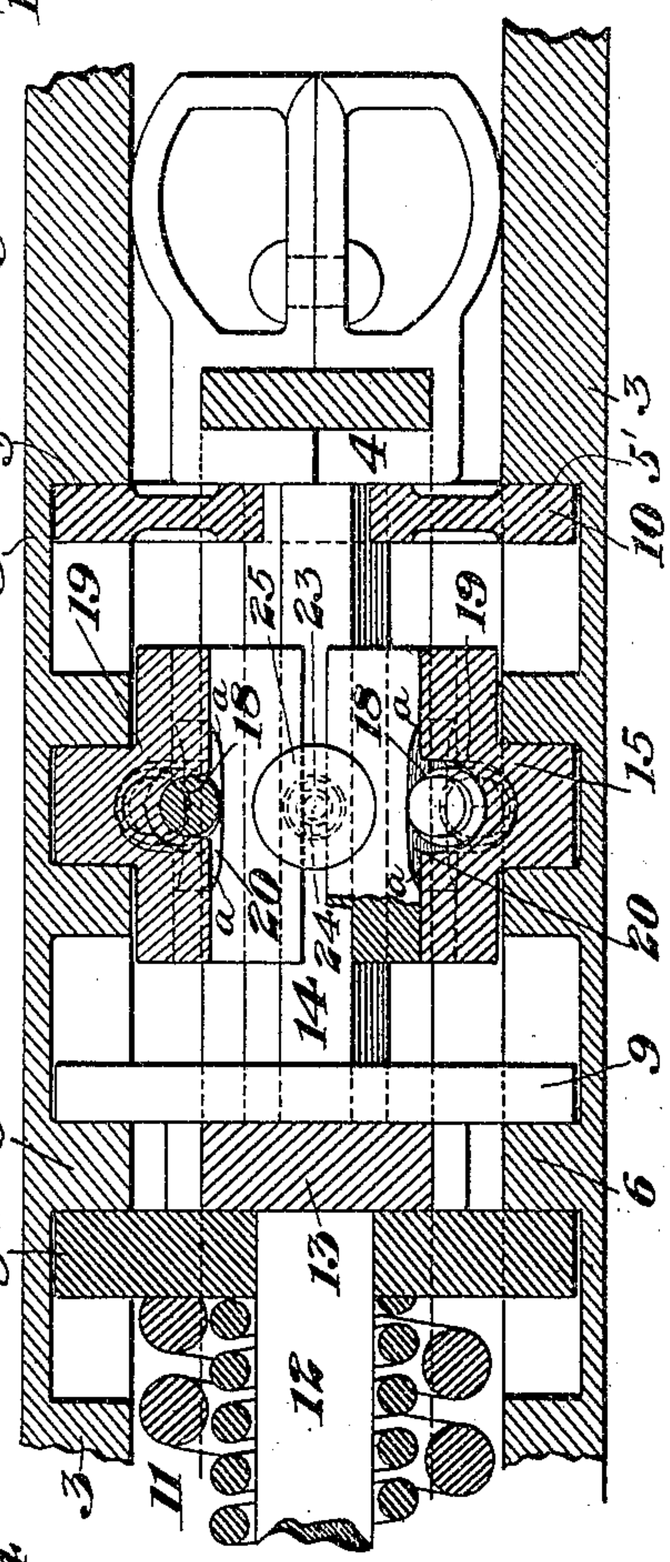


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 8.

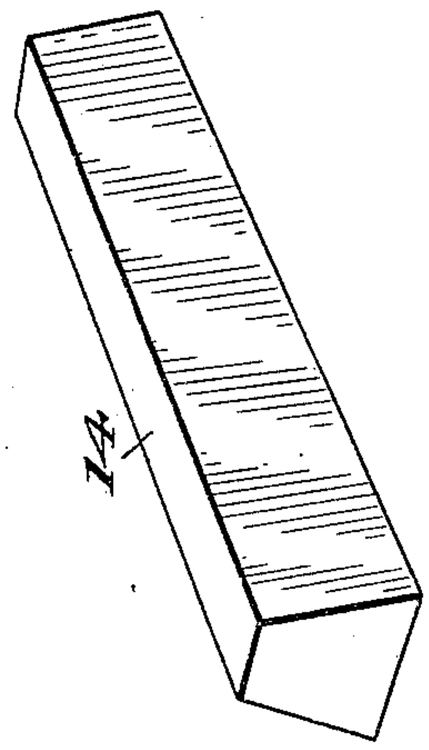


Fig. 11.

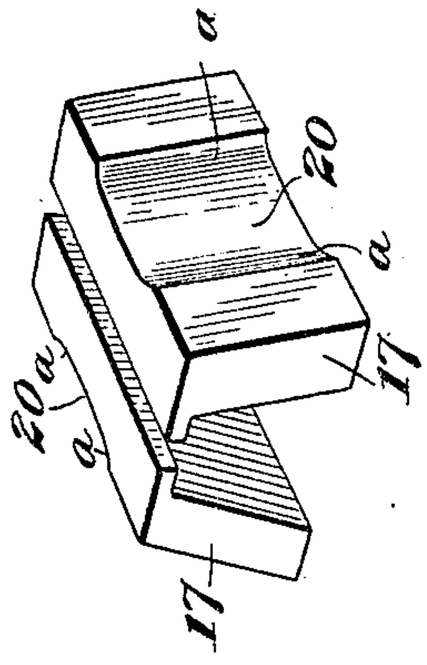


Fig. 9.

Fig. 7.

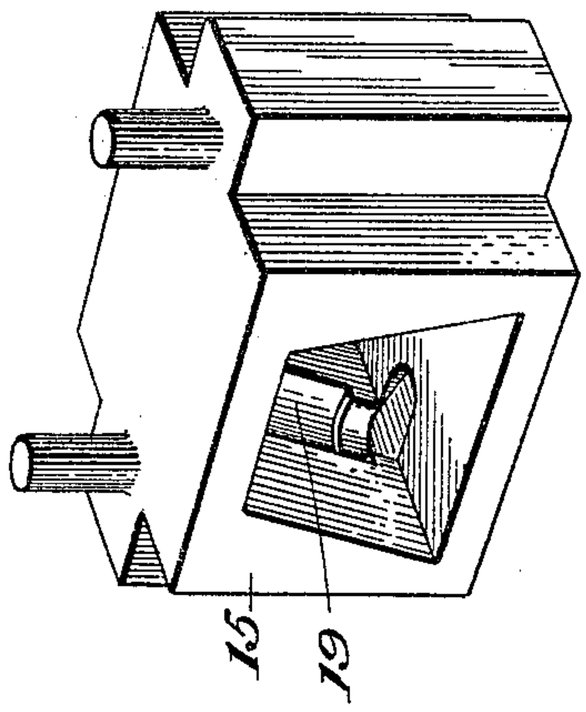
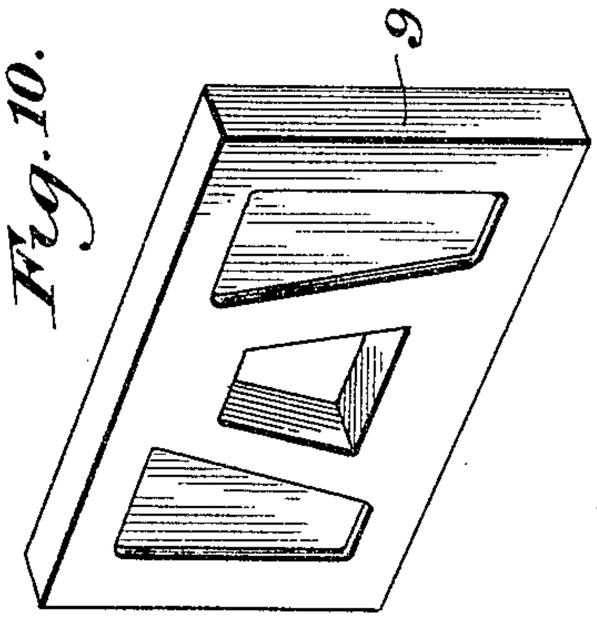


Fig. 10.



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No. 784,406. Patented March 7, 1905.

UNITED STATES PATENT OFFICE.

HARRY T. KRAKAU, OF CLEVELAND, OHIO, AND LENDELL A. CONNER, JR., OF PITTSBURG, PENNSYLVANIA, ASSIGNORS TO THE NATIONAL MALLEABLE CASTINGS COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

DRAFT-RIGGING.

SPECIFICATION forming part of Letters Patent No. 784,406, dated March 7, 1905.

Application filed June 3, 1902. Renewed January 13, 1903. Serial No. 138,927.

To all whom it may concern:

Be it known that we, HARRY T. KRAKAU, of Cleveland, Cuyahoga county, Ohio, and LENDELL A. CONNER, Jr., of Pittsburg, Allegheny county, Pennsylvania, have invented a new and useful Draft-Rigging, 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 a top plan view of our frictional draft-rigging. Fig. 2 is a longitudinal section on the line II II of Fig. 1. Fig. 3 is a horizontal section on the line III III of Fig. 2. Figs. 4 and 5 are vertical cross-sections on the lines IV IV and V V, respectively, of Figs. 1 and 2. Fig. 6 is a horizontal section showing a modified construction of the friction elements. Figs. 7, 8, 9, 10, and 11 are perspective detail views.

In the drawings, 2 represents the draw-bar. 3 3 are the draft-irons. 4 is the yoke. 5 5′ are end stops on the draft-irons 3, and 6 is an intermediate stop. 7, 8, 9, and 10 are followers, which abut against the stops. The follower 7 has a bearing against the stop 5, the followers 8 and 9 bear against opposite sides of the stop 6, and the follower 10 bears against the stop 5′. Between the followers 7 and 8 is placed the usual draft spring or springs 11, set around a central spindle 12, which extends through the followers 7 and 8 and at the forward end abuts against the draw-bar, its rear end abutting against a filler-block 13, which is held in position by the upper and lower members of the yoke 4 and is placed between the followers 8 and 9. In line with the spindle 12 is a friction bar or element 14, which is preferably of tapering form, as shown in Figs. 5 and 8. This bar at its forward end extends through the follower 9 and abuts against the filler-block 13 and at its opposite end extends through the rear follower 10 and abuts against the yoke. The followers 9 and 10 uphold the friction-bar 14 and rest upon the floor 3′ of the draft-irons 3. The spindle 12, the filler-block 13, and the friction-bar 14 constitute, in effect, a central spindle, which is stationary with respect to the draw-bar and yoke and moves with them in both buffing and pulling. This provides a simple and effective means for releasing the friction elements, as will be more fully described hereinafter.

15 is a cage, through which the friction-bar extends. It is held against endwise movement by engagement with confining-ribs 16 16, as shown in Figs. 1, 2, and 3. The cage is provided with tapering interior side walls, which preferably conform to the taper of the friction-bar 14, and between the walls of the cage and the friction-bar are placed friction-shoes 17 17, although they may be dispensed with. The opposite faces of the friction-shoes conform to the shape of the friction-bar 14 and the shape of the inner walls of the cage 15, with which they are in contact.

18 18 are rollers mounted in cavities 19, formed in the cage, and preferably made slightly eccentric with respect to their end bearings.

Each friction-shoe 17 has a bearing portion 20, which for a certain portion is parallel to the plane of the meeting faces of the cage and the friction-shoe; but at the ends it is inclined somewhat, so as to have a wedging action, as hereinafter described.

The draft-irons 3 3 are preferably provided with pockets 21 21 for springs 22 22, which bear against the cage 15 at their lower ends and against a stop at their upper ends. These springs exert a constant downward pressure upon the cage, and by pressing the friction-shoes 17 along the surface of the friction-bar 14 transversely to the direction of its longitudinal motion they take up wear and maintain the friction elements in contact with each other, so that they will act immediately and without intermediate lost motion. As an additional security against vertical displacement a spring 23 is employed, which holds the friction-shoes downwardly by a stem 24, having a head 25, which bears upon the upper sides of the friction-shoes.

The operation of our device is as follows: If a buffing force be applied to the draw-bar, the draw-bar and the yoke will move rear-

wardly and the follower 7 will be engaged by the draw-bar and will compress the draft-spring, which is held against endwise movement by the follower 8, which is backed up by the stop 6. The spindle 12 will at the same time move rearwardly, being engaged by the draw-bar, and its opposite end will cause the filler-block to move the friction-bar 14, and the follower or support 9 will be moved by the filler-block rearwardly. The rearward movement of the friction-bar, by reason of the initial friction set up between the shoes 17 17 and the friction-bar 14 by the action of gravity augmented by the pressure of the springs 22 22 upon the cage 15, will cause the friction-shoes 17 17 to travel with the bar, and this movement of the shoes will cause the rollers 18 18 to turn. If the rollers be eccentric, a gradually-increasing pressure upon the shoes 16 16 will be exerted, as these parts move through the cage 15, and when the rollers engage the inclines *a a* the amount of pressure will be increased to the desired degree, so that the maximum resistance will be afforded. If a pulling force be applied to the draw-bar with the parts in the position which they assume when the friction elements have been acted upon to set up the frictional resistance, the release of the parts is accomplished by the draw-bar and yoke acting through the central spindle constituted by the parts 12, 13, and 14, which moves with the draw-bar. This tends to draw the shoes into their normal position, and the rollers 18 18 turning in their respective pockets in the opposite direction from that by which friction was applied the pressure of the spindle is relieved thereby. If a pulling force be applied to the draw-bar, the yoke 4 will cause the friction-bar 14 to move forward with it and the initial friction between said bar and the shoes will move the shoes with the bar. This will cause the rollers to apply the friction in the same manner as that just described. At the same time the follower 8 is engaged by the filler-block 13, and as the draw-bar moves away from the follower 7, which is backed up by the stop 5, the draft-springs will be compressed. This gives our device the same amount of spring and frictional resistance in both buffing and pulling. The release of the parts after friction has been set up is effected in the same manner as that just described in reference to the buffing action.

In Fig. 6 we show a modified form of our friction devices, in which oscillatory cams are used to effect the squeezing action upon the friction-bar.

While we have shown friction-shoes between the rollers or cams which are placed within the cage in order to give the increased frictional resistance to the endwise movement of the friction-bar, it is obvious that this element may be dispensed with, and the rollers or cams may act directly on the bar.

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

We claim—

1. A frictional draft-rigging having a stationary cage, a longitudinally-movable friction member which moves within the cage, and a friction device contained within the cage and in frictional contact with said longitudinally-movable member, said friction device being in both pulling and buffing moved longitudinally with said member and solely by its lateral frictional contact therewith, and means adapted to exert in such movement a frictional wedging action on the member; substantially as described.

2. A frictional draft-rigging comprising a rolling or oscillatory friction member having surface-bearings on its opposite sides; substantially as described.

3. A frictional draft-rigging comprising a rolling or oscillatory friction member having surface-bearings on its opposite sides, and an inclined surface against which said friction member bears; substantially as described.

4. A frictional draft-rigging comprising a rolling or oscillatory friction member having surface-bearings on its opposite sides, and an inclined surface against which said friction member bears, said member and its frictional bearing having relatively inclined surfaces; substantially as described.

5. A frictional draft-rigging comprising a rolling or oscillatory friction member having surface-bearings on its opposite sides, and an inclined surface against which said friction member bears, said member and its frictional bearing having relatively inclined surfaces extending in both directions from a central position; substantially as described.

6. A frictional draft-rigging having a longitudinally-movable friction member with downwardly-diverging but otherwise untapered sides, and a friction member adapted to bear thereon; substantially as described.

7. A frictional draft-rigging having a longitudinally-movable friction-bar with downwardly-diverging but otherwise untapered sides, and friction-shoes adapted to bear thereon; substantially as described.

8. A frictional draft-rigging having a longitudinally-movable friction member with downwardly-diverging but otherwise untapered sides, and a second friction member, and spring-bearings upon said member adapted to create initial friction between the parts and to take up lost motion; substantially as described.

9. A frictional draft-rigging comprising an eccentric rolling or oscillatory friction member having bearings on both sides; substantially as described.

10. A frictional draft-rigging comprising an eccentric rolling or oscillatory friction member having bearings on both sides, said eccen-

tric friction member having an inclined surface against which it bears; substantially as described.

11. A frictional draft-rigging, having a longitudinally-movable friction member, friction-shoes set at an inclination thereto and engaging said friction member, and means for pressing said shoes against said friction member and transversely to the longitudinal motion thereof; substantially as described.

12. A frictional draft-rigging having a longitudinally-movable friction member, friction-shoes set at an inclination thereto, and a spring for pressing the shoes against said friction member and transversely to the longitudinal motion thereof; substantially as described.

In testimony whereof we have hereunto set our hands.

H. T. KRAKAU.
LENDELL A. CONNER, JR.

Witnesses:
THOMAS W. BAKEWELL,
H. M. CORWIN.