No. 720,529. PATENTED FEB. 10, 1903.

H. T. KRAKAU.

DRAFT RIGGING.

APPLICATION FILED MAR. 18, 1902.

NO MODEL. 4 SHEETS—SHEET 1.

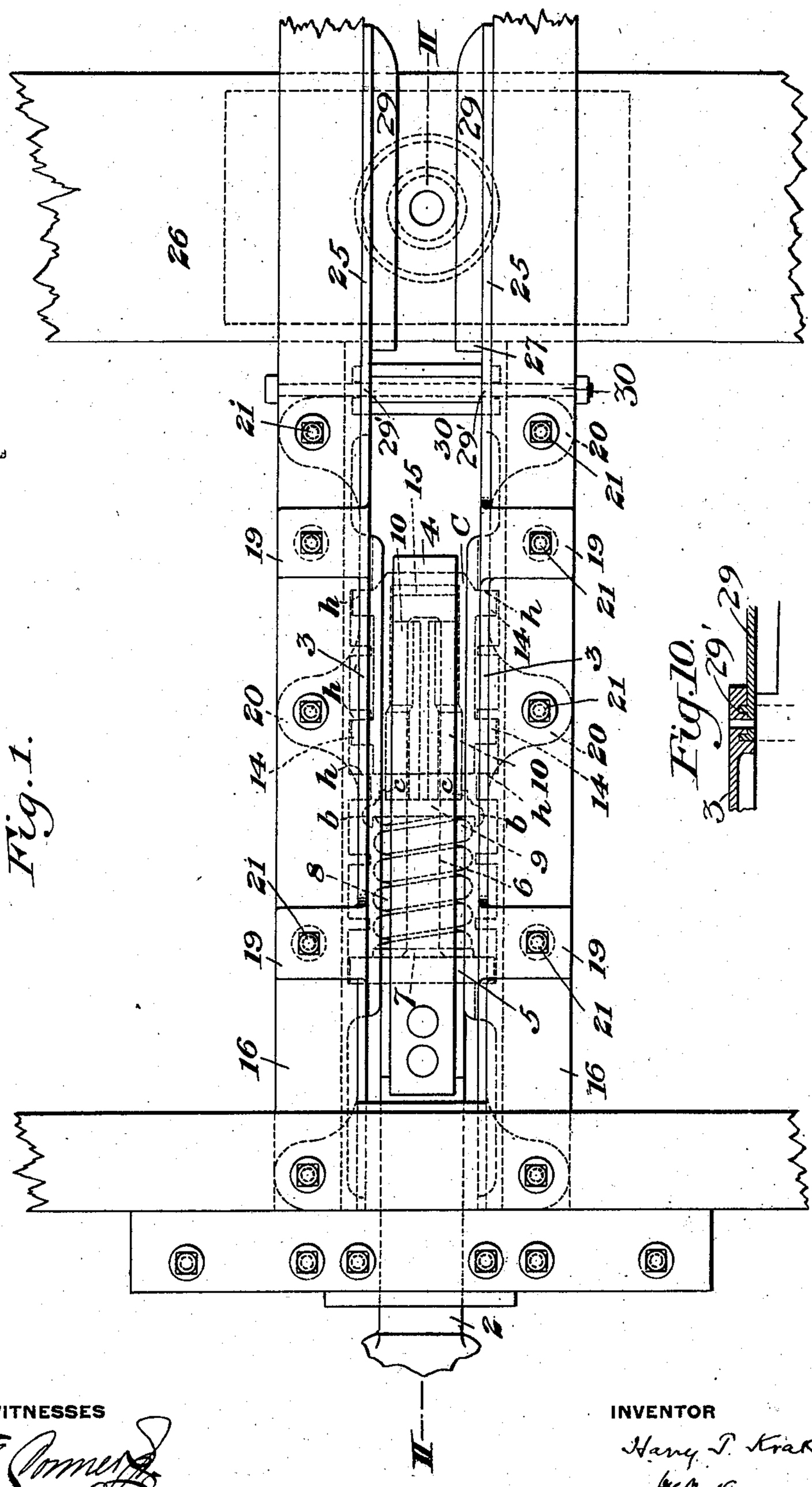

Fig. 1.

Fig. 10.

WITNESSES

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NO MODEL. 4 SHEETS—SHEET 2.

Fig. 2.

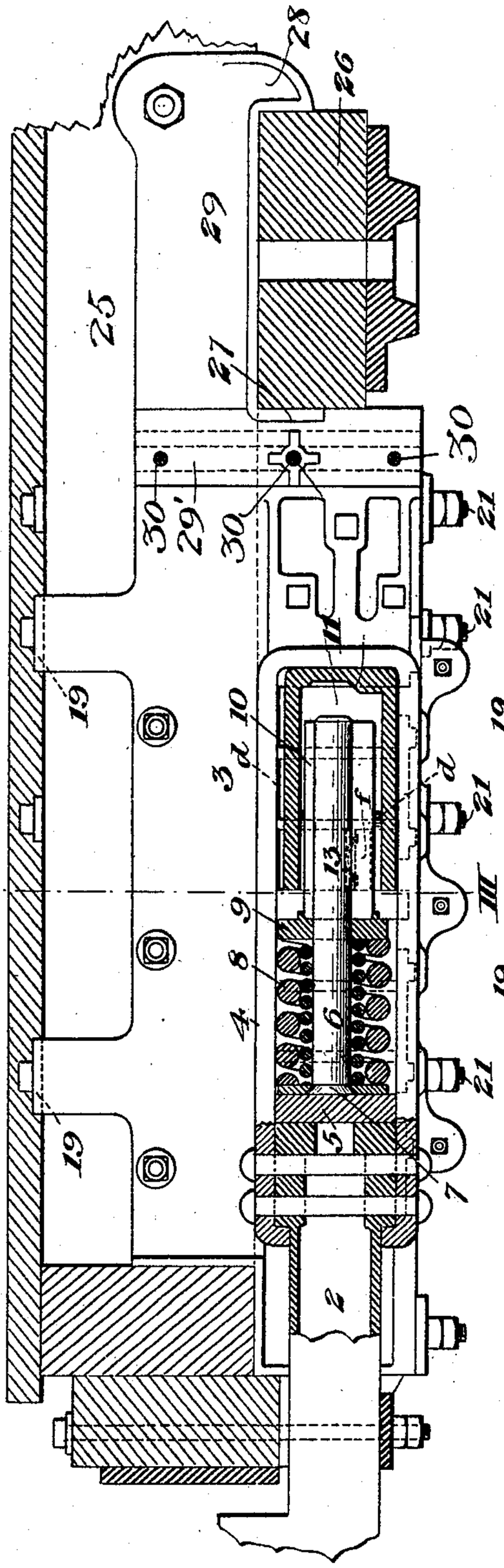
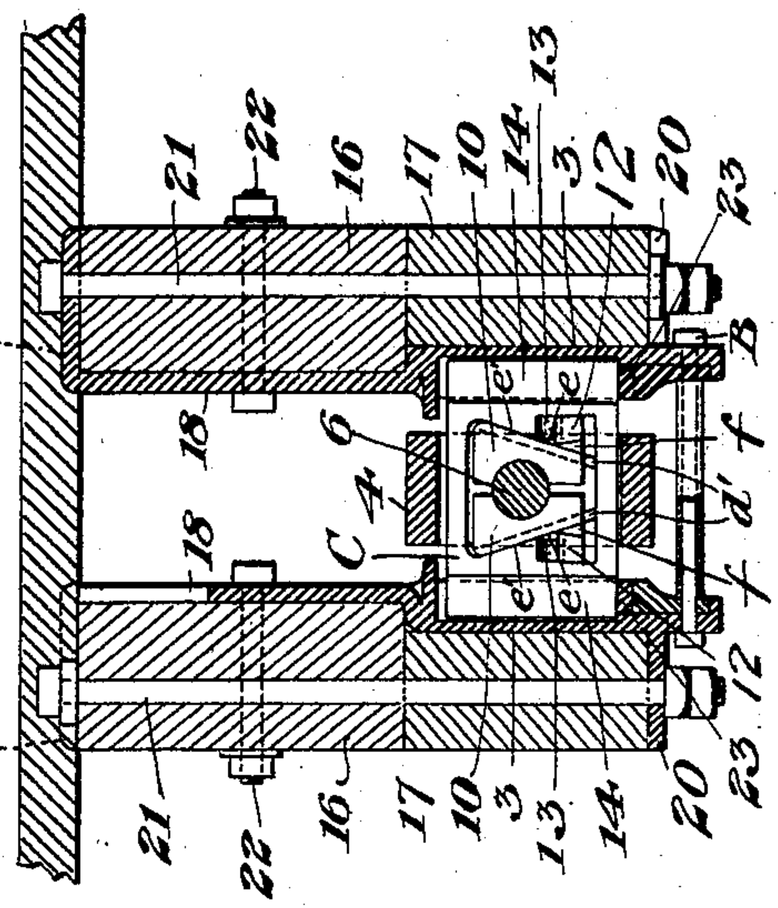


Fig. 3.



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NO MODEL. 4 SHEETS—SHEET 3.

Fig. 7.

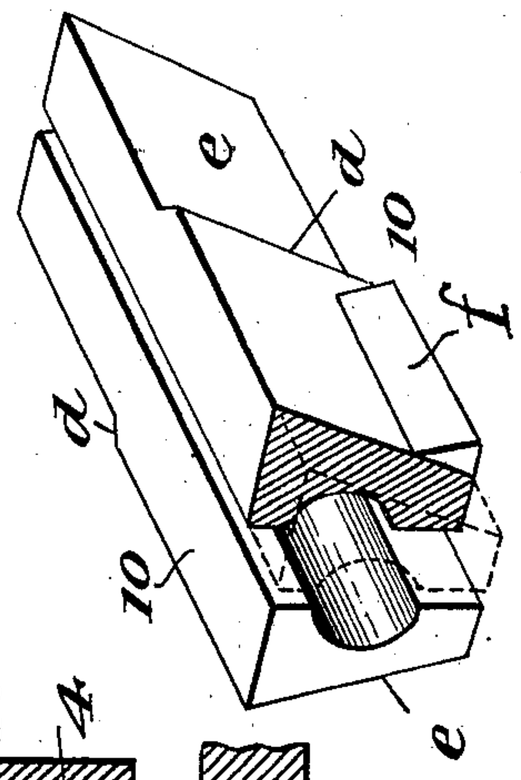


Fig. 6.

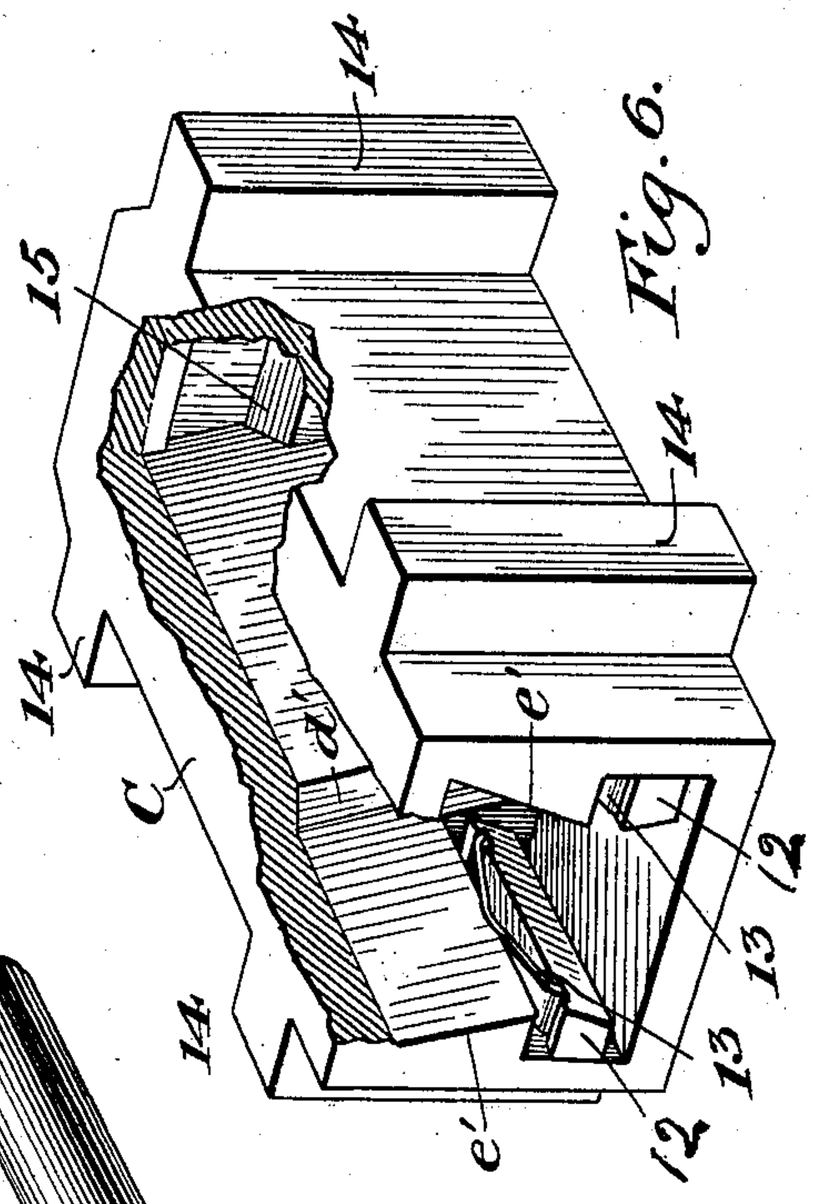


Fig. 4.

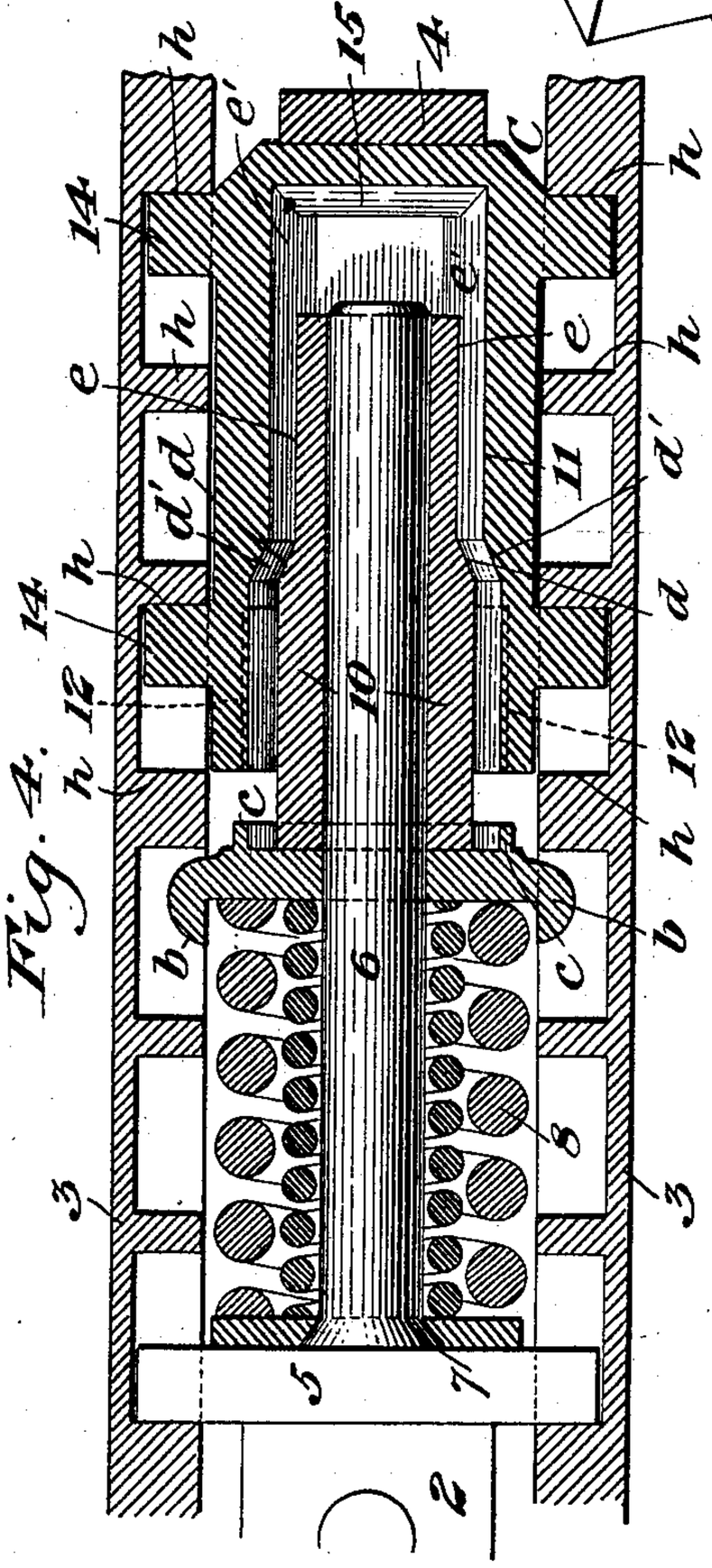
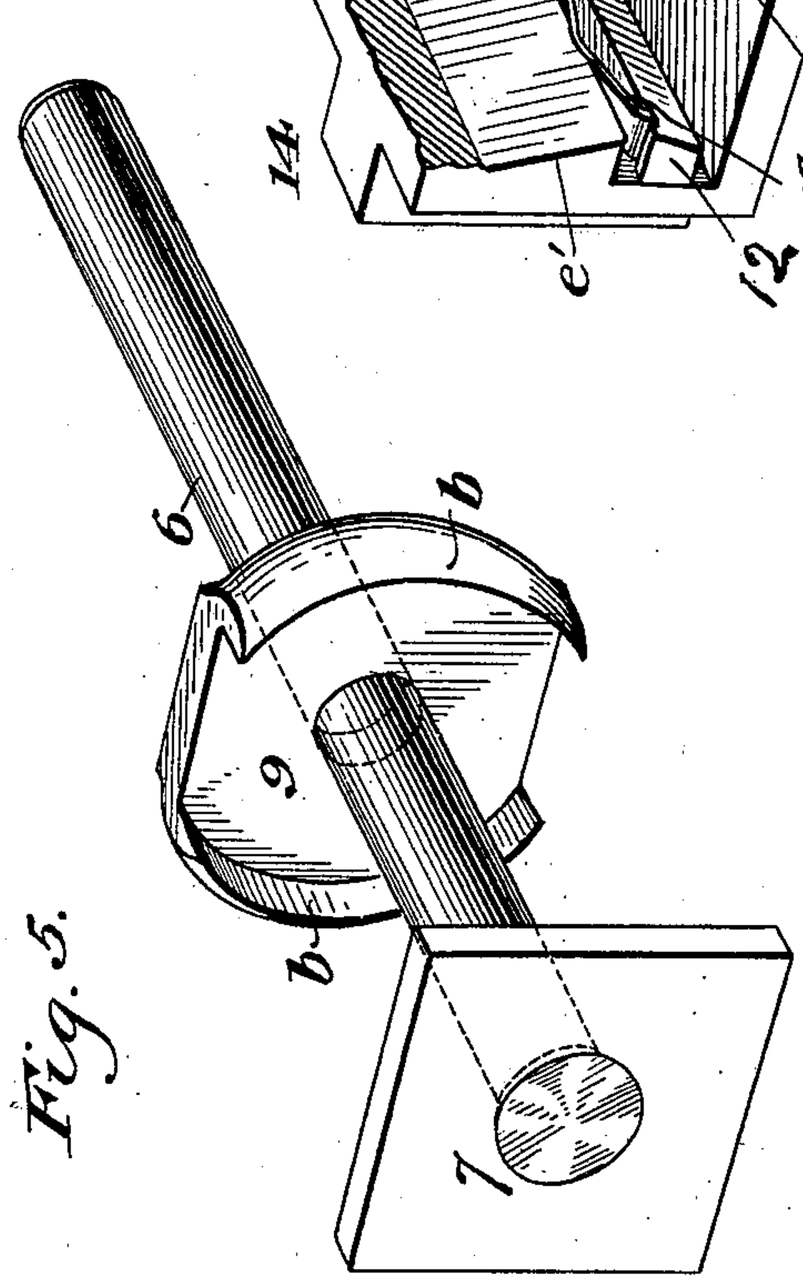


Fig. 5.



WITNESSES

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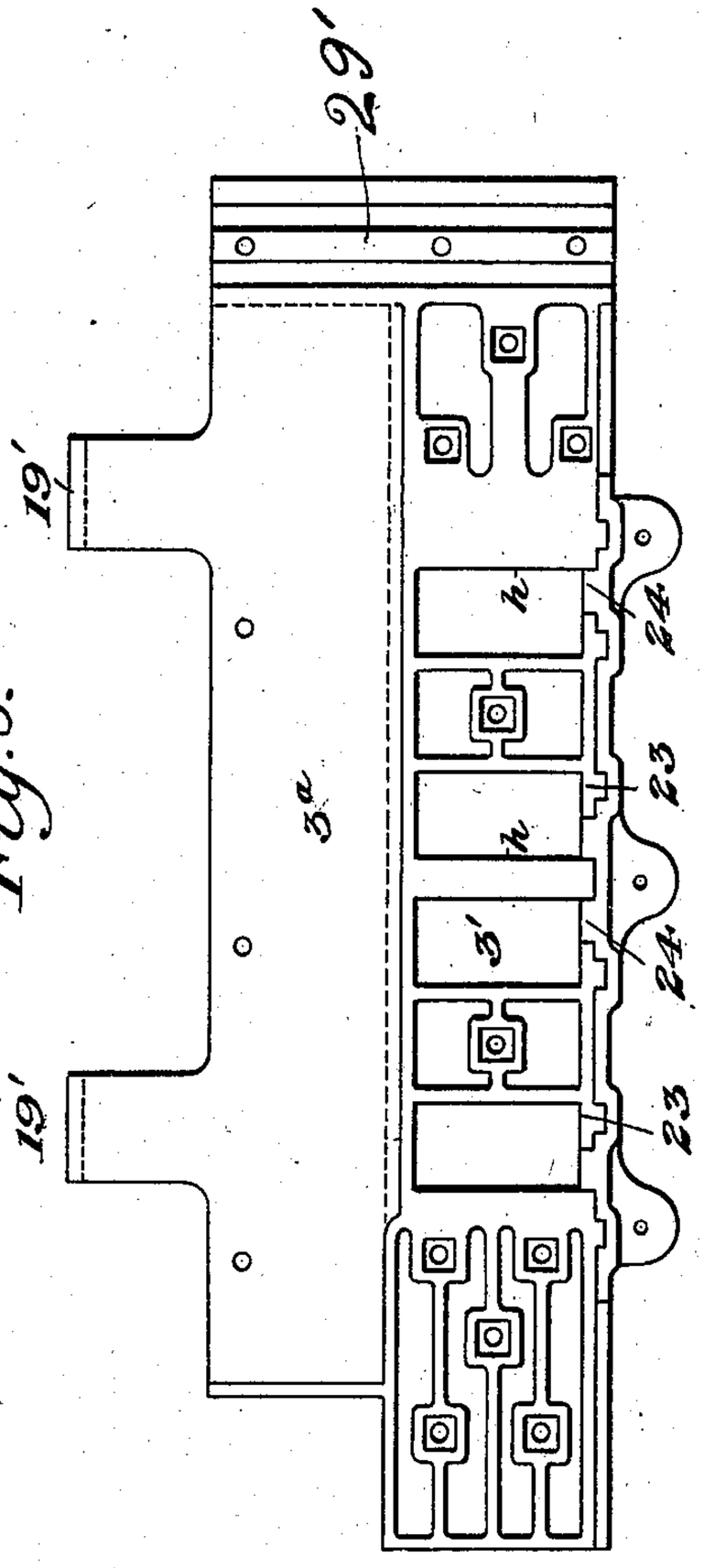
DRAFT RIGGING.

APPLICATION FILED MAR. 18, 1902.

NO MODEL. 4 SHEETS—SHEET 4.

Fig. 8.



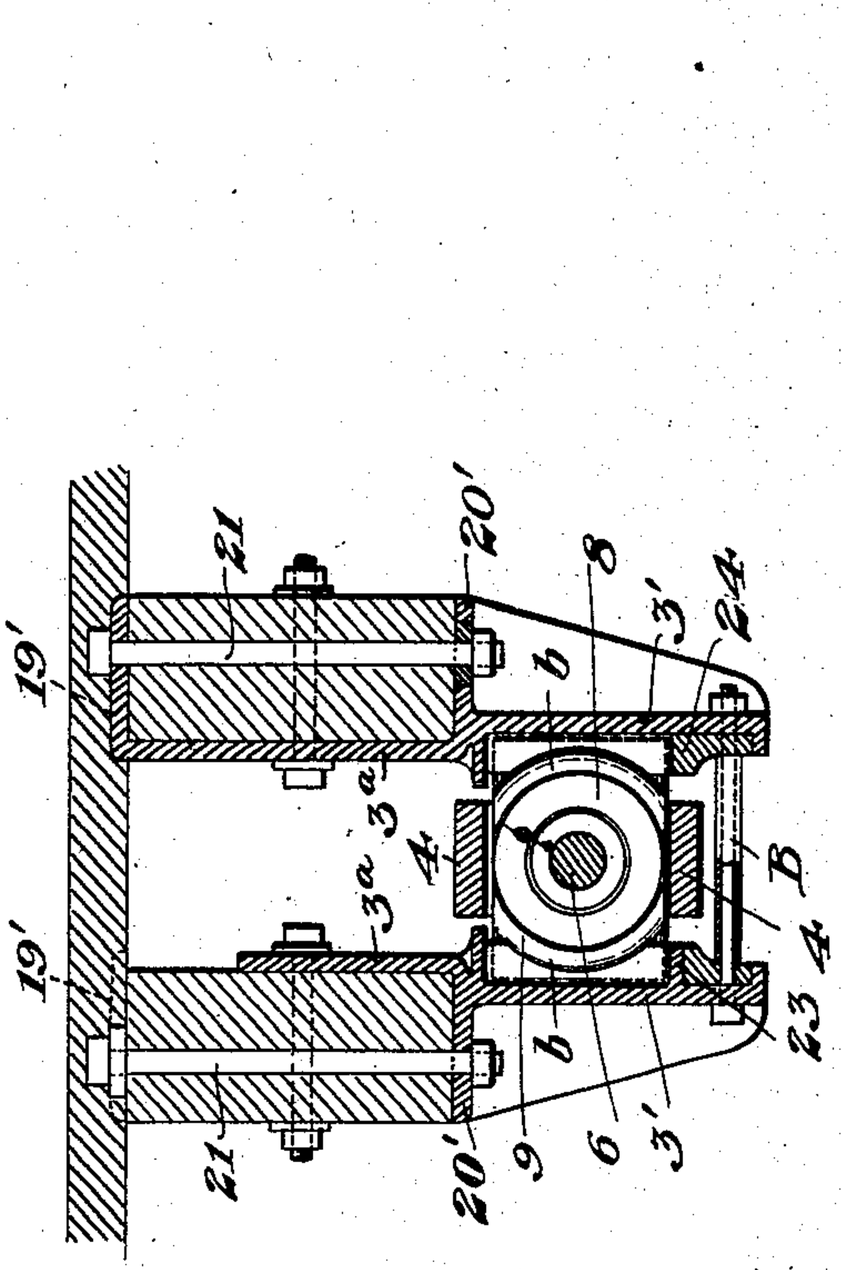


Fig. 9.

WITNESSES

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UNITED STATES PATENT OFFICE.

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DRAFT-RIGGING.

SPECIFICATION forming part of Letters Patent No. 720,529, dated February 10, 1903.

Application filed March 18, 1902. Serial No. 98,755. (No model.)

To all whom it may concern:

Be it known that I, HARRY T. KRAKAU, of Cleveland, Cuyahoga county, Ohio, 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 my improved friction draft-rigging. Fig. 2 is a longitudinal section on the line II II of Fig. 1. Fig. 3 is a cross-section of the same on the line III III of Fig. 2, showing one form of draft-irons I may employ. Fig. 4 is a horizontal section, on a larger scale, showing the friction device and draft-springs. Figs. 5, 6, and 7 are detail perspective views of the parts of the friction devices. Fig. 8 is an inside view of one of the draft-irons; and Fig. 9 is a cross-section similar to Fig. 3, showing a modified form of draft-iron, the section being taken through the draft-spring. Fig. 10 is a sectional detail view.

My invention is designed to afford a frictionally-acting draft-rigging of simple construction which will act efficiently in service and will resist the very severe strains to which such devices are subject when in use. These qualities are of especial importance in mechanism of this class.

My invention in one of its features consists in a longitudinally-movable friction member which moves with the draw-bar, combined with a second friction member, and means, preferably a longitudinally inclined or beveled surface, which exerts a clamping action thereon when the draw-bar is moved lengthwise, and a transversely-inclined surface which under the influence of gravity or a spring, or both, imparts an initial clamping or frictional action, causing the friction members always to be in contact and to be ready to act at once without wasteful intermediate idle motion.

This invention may be embodied by the skilled mechanic in various forms. I show in the drawings what I deem to be the preferable form, and I will now describe the same without intending to limit the invention strictly thereto.

In the drawings, 2 represents the draw-bar. 3 3 are the draft-irons. 4 is the yoke, and 5 is a follower at the rear end of the draw-bar.

6 is a rod which constitutes one of the friction members. It is preferably circular in cross-section, though it may be of other form, and it has a head 7, which abuts against the follower 5 on one side and at the other side constitutes a bearing for a spring 8, which I show as a double spring composed of two concentric coils encircling the rod. The head may be constituted by the follower itself, if it be fixed to the rod. At the other end of the spring is a loose spring seat or stop 9, preferably made of annular form, with flanges *b c* on its opposite faces to constitute supports for the ends of the springs and for the ends of wedges 10 10, which are placed on opposite sides of the rod. These wedges have longitudinally-inclined surfaces *d d*, and their sides are also inclined transversely, as at *e e*, and they fit between plates 11 11, which constitute fixed friction members, and are preferably joined together in an integral cage C, the cage being encircled by the yoke 4.

The plates 11 11 have inclined surfaces *d' d'* and *e' e'*, which are the counterparts of the inclined surfaces *d* and *e* of the wedges, and as the inclined surfaces *e' e'* converge downwardly the influence of gravity tends to draw the wedges together upon the rod and to keep them firmly in contact therewith. To assist gravity in this action, I may provide the wedges with shoes *f f*, having inclined faces fitting against holders 12 12, which are pressed downwardly upon the shoes by springs 13, interposed between the holders and shoulders on the plates 11.

The cage is preferably provided with shoulders 14, adapted to operate as stops, in conjunction with shoulders *h* on the draft-irons, to limit the motion of the cage.

The operation is as follows: In Fig. 4 the parts are shown in a position of rest. When a buffing blow is imparted to the draw-bar, it compresses the spring 8, and through the spring it exerts a rearward longitudinal force upon the wedges 10, while the rod 6, moving with the draw-bar, moves through the spring and between the wedges. By such rearward

pressure upon the wedges the contact of the inclined surfaces *d d'* causes them to be forced inwardly with a strong frictional pressure upon the rod 6, and as the wedges were held with an initial frictional pressure against the rod by the action of the inclined surfaces *e' e'* under the influence of gravity and the springs 13 and are restrained by the holders 12 from upward displacement there is no lost motion, and the device even after long service takes up wear automatically and acts immediately and steadily without the jerking which would occur if idle motion were permitted. When the buffing force is relieved, the spring 8, acting on the head of the rod 6, will cause the prompt release of the friction-surfaces. To provide further for the release, I form at the rear end of the cage an inclined surface 15, which engages the rod 6 at the end of its rearward motion and lifts it, thus raising the wedges slightly and freeing them from binding engagement with the sides of the cage. This prevents them from sticking and insures prompt release. Under draft the cage C is drawn forward by the yoke 4, and the wedge 10 being then resisted by the spring-seat 9 and spring 8 the cage acts upon the wedges and clamps them upon the rod 6, so that both in buffing and pulling the motion of said rod is resisted by the frictional contact of the wedges, and their prompt and steady action is insured by the means above explained.

In Fig. 3 I show another part of my draft-rigging, designed to prevent the draft-timbers becoming loose from the longitudinal sills, to which they are secured, and sagging down, thus interfering with the stability and effectiveness of the draft-rigging. In this figure, 16 16 represent the longitudinal sills of the car-frame, and 17 17 are the draft-timbers, to which the draft-irons 3 3 are secured. For the purpose of holding these parts firmly together I extend the draft-irons upwardly at 18 along the sides of the sills and provide them at intervals with lugs or flanges 19 20, which fit under the draft-timbers and over the sills at the places where the bolts 21 pass. I preferably place the upper lugs above the sills, out of vertical line from the lower lugs, which are under the draft-timbers, as shown in the drawings. Each bolt has, therefore, only one bearing on a lug and can thus draw the parts firmly together. The draft-irons are also preferably connected to the sills by lateral bolts 22. When the parts are thus constructed and assembled, a very firm and secure connection is made between the draft-timbers and the sills, which will hold them together under all ordinary conditions of use.

In Figs. 8 and 9 I show a modification of my invention, in which the metal draft-irons 3' 3' themselves constitute the draft-timbers. In this case the combined draft-timbers and draft-irons have portions 3^a extending up along the sills and having lateral lugs or flanges 19' 20' extending over the sills and under the sills for the reception of the bolts, the flanges being alternated and each bolt having only one bearing on a flange or lug.

Another feature of my invention relates to the follower guides or supports at the base of the draft-irons. I provide the draft-irons on their inner faces with horizontal follower-supporting flanges 23 23, which are cut away at intervals to allow vertical insertion of the followers, and when the followers are inserted I apply strips 24, recessed in counterpart of the flanges 23, so that when the strips are in place continuous straight supports for the followers are afforded. These strips are held by cross-bolts B, which extend through the strips and draft-irons. Vertical bolts, whose holes weaken the flanges, may thus be dispensed with. The flanges 23 also add greatly to the strength of the draft-irons.

As an additional means of securing the draft-irons and draft-timbers and to relieve the parts from strain I extend the draft-irons at 25 over the bolster 26, abut them against the front of the bolster at 27, and provide them with lips 28, which fit back of the bolster. The bolster thus supports and braces the draft-irons and takes the strain off the bolts. I prefer for this purpose to make the rear end of the draft-irons of separable sections 29, Fig. 10, fitted by tongues and sockets 29' to the draft-irons and held thereto by bolts 30 or like means.

I claim—

1. A draft-rigging having a friction member inclined lengthwise and adapted by such inclination to exert a wedging action when moved lengthwise, a second friction member with which it exerts such wedging action, and a surface inclined transversely to such lengthwise inclination and adapted to maintain frictional contact between the members; substantially as described.

2. A draft-rigging having a longitudinally-movable friction member, a second friction member with which it is pressed into contact when the draw-bar is moved lengthwise, and a surface inclined transverely to the line of said longitudinal motion and adapted under the gravity of the parts to impart frictional contact to said members; substantially as described.

3. A draft-rigging having a friction member inclined lengthwise and adapted by such inclination to exert a wedging action when moved lengthwise, a second friction member with which it exerts such wedging action, and a surface inclined transversely to such lengthwise inclination and adapted to maintain frictional contact between the members, and a spring coacting with such transversely-inclined surface; substantially as described.

4. A draft-rigging having friction members adapted to move by gravity into frictional contact and to take up wear; substantially as described.

5. A draft-rigging having a longitudinally-

movable friction member, a wedge having a longitudinally-inclined surface, and a transversely-inclined surface, and a third friction member having portions corresponding to said inclined surfaces; substantially as described.

6. A draft-rigging having longitudinally-acting wedges, and friction members formed with downwardly-converging sides between which the wedges are situated; substantially as described.

7. A draft-rigging having a longitudinally-movable friction member, wedges, a movable cage having inclined surfaces to engage the wedges, and a connection between the cage and the draw-bar, said cage having converging sides; substantially as described.

8. A draft-rigging having longitudinally and transversely inclined friction members; substantially as described.

9. A draft-rigging having movable friction members, and means adapted to engage a friction member near the end of its travel and to move it positively to secure its release; substantially as described.

10. In a draft-rigging, the combination of a longitudinally-movable friction member, a spring encircling the same, other movable friction members, a loose stop interposed between the spring and the last-named friction members; substantially as described.

11. In a draft-rigging the combination of a longitudinally-movable friction member, a spring encircling the same, other movable friction members, a loose stop interposed between the spring and the last-named friction members, and shaped to support the ends thereof; substantially as described.

12. In a draft-rigging, the combination of a longitudinally-movable friction member, a spring encircling the same, other movable friction members, a head on said movable friction member, and a spring interposed between the head and the wedges; substantially as described.

13. In a draft-rigging, the combination of a longitudinally-movable friction member, a spring encircling the same, other movable friction members which are inclined transversely, and fixed friction members against which the wedges operate, said wedges being inclined transversely; substantially as described.

14. A draft-rigging, having movable friction members with shoes thereon, and spring-pressed holders engaging the same longitudinally; substantially as described.

15. A draft-rigging, having movable friction members with shoes thereon and spring-pressed holders engaging the same, said shoes and holders having inclined surfaces; substantially as described.

16. A draft-rigging having longitudinal sills, and a connection between the sills and draft-irons, comprising upwardly-extending portions on the draft-irons, having lugs or flanges extending above the sills and adapted to receive the bolts; substantially as described.

17. A draft-rigging having longitudinal sills, draft-timbers below the sills, and draft-irons extending upwardly along the sills, and having flanges extending respectively under the draft-timbers and over the sills; substantially as described.

18. A draft-rigging having longitudinal sills, and a connection between the sills and draft-irons, comprising upwardly-extending portions on the draft-irons, having upper and lower lugs or flanges adapted to receive the bolts; the upper flanges or lugs being out of vertical line from the lower flanges or lugs, thus providing the respective bolts with only one flange-bearing; substantially as described.

19. A draft-rigging having draft-irons provided on their inner surfaces with follower-supporting flanges, and strips extending along the flanges; substantially as described.

20. A draft-rigging having draft-irons provided on their inner surfaces with follower-supporting flanges recessed to admit the followers, and strips extending along the flanges and recessed to fit the same; substantially as described.

In testimony whereof I have hereunto set my hand.

HARRY T. KRAKAU.

Witnesses:
H. M. CORWIN,
L. A. CONNER, Jr.