(No Model.)

G. KAFFENBERGER.

PAPER MACHINE FRAME.

No. 389,576. Patented Sept. 18, 1888.

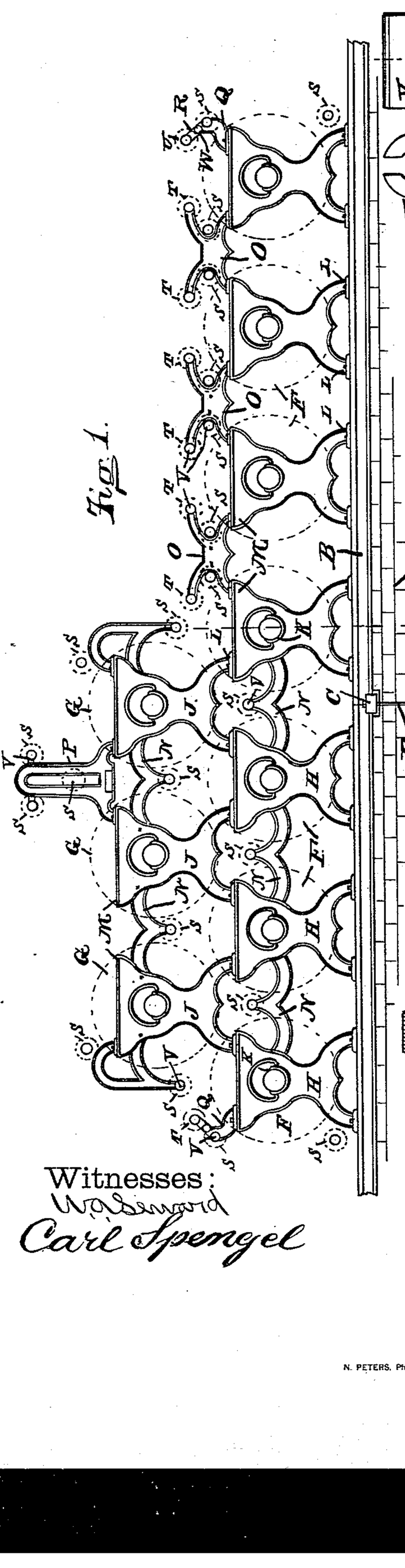

Fig. 1.

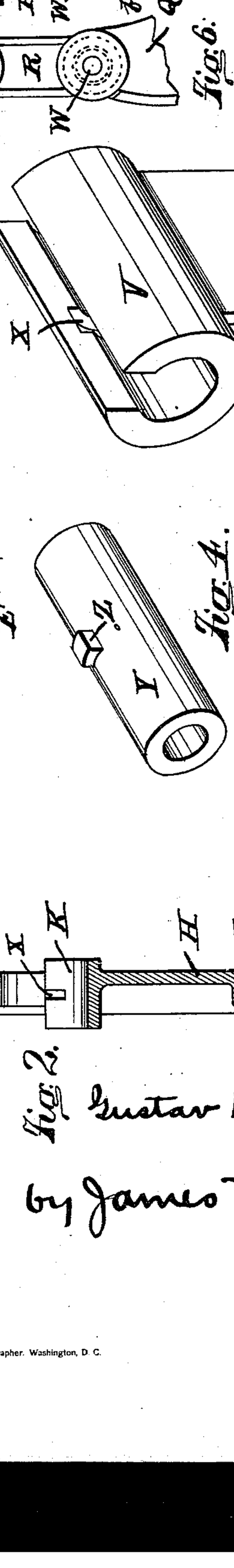

Fig. 2.

Fig. 3.

Fig. 4.

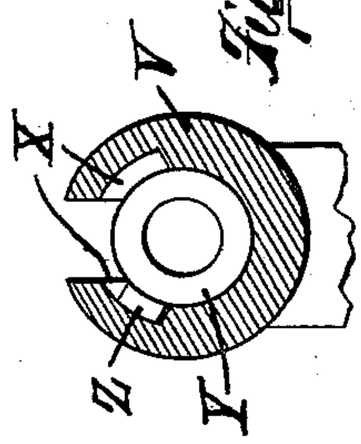

Fig. 5.

Fig. 6.

Fig. 7.

Witnesses:
W. A. Seward
Carl Spengel

Gustav Kaffenberger
Inventor
by James N. See
Attorney

UNITED STATES PATENT OFFICE.

GUSTAV KAFFENBERGER, OF HAMILTON, OHIO.

PAPER-MACHINE FRAME.

SPECIFICATION forming part of Letters Patent No. 389,576, dated September 18, 1888.

Application filed February 18, 1888. Serial No. 264,467. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV KAFFENBERGER, of Hamilton, Butler county, Ohio, have invented certain new and useful Improvements in Paper-Machine Frames, of which the following is a specification.

This invention pertains to the frame parts of paper-machines, and will be readily understood from the following description, taken in connection with the accompanying drawings, illustrating my invention in connection with the drier portion of a paper-machine—

Figure 1 being a side elevation of a drier-frame carrying seven base-pieces and three superdriers; Fig. 2, a vertical transverse section of one of the housings H; Fig. 3, a perspective view of one of the roll-boxes; Fig. 4, a perspective view of a bushing for one of these boxes; Fig. 5, a vertical transverse section of one of these boxes with the bushing shown in end elevation; Fig. 6, a face view of one of the arms R, carrying the boxes of the spring-roll U; and Fig. 7, a side view of the same with the joint portion shown in section in a plane parallel to the pivot of the joint.

In the drawings, A represents one of the longitudinal walls for the support of the framing; B, a sole-bar resting thereon and provided with a continuous bolt-slot in its top, it being understood that there is of course a wall and sole-bar along under each line of seat-framing of the machine; C, a chair engaging downwardly upon the foot of the sole-bar, the intention being that there shall be one of these chairs at each joint in the sole-bars, and more of them if required, the top of the wall being notched to receive these chairs free of downward contact with the wall; D, eyebolts reaching, one on each side of the wall, from the chair downwardly; E, a bar extending through the wall and projecting sidewise therefrom and engaged by the eyes of the bolts D, whereby the eyebolts serve as means for drawing the sole-bars firmly down upon the wall; F, the drying-cylinders, (shown in dotted lines and as being seven in number;) G, superdriers disposed in the usual relative position over the other driers; H, housings, one for each journal of the driers F; J, similar housings for the superdriers G, the housings J resting upon and being secured to and supported by the appropriate ones of the housings H; K, journal-boxes for the driers, these boxes being integrally formed with the housings and having a form more fully described hereinafter; L, the feet of the housings, these feet spreading symmetrically from the vertical center of the housing and fitted to a seat upon the sole-bar, or, in the case of housings J, upon the tops of the housings below them, and to be secured thereto by bolts; M, top arms to the housings, the same spreading symmetrically sidewise from the vertical center of the housings substantially the same distance as represented by the spread of the feet of the housings, the tops of the extremities of these arms being adapted to have attached to them, by bolting, the feet of the superposed housings or the feet of other attaching parts, as hereinafter described; N, reach-pieces, reaching from one housing to the next and secured to the housings by bolts, these reach-pieces serving at once for the support of certain felt rolls and for the longitudinal union and stiffening of the framing in places where the framing becomes subjected to the most strains by the reason of the presence of superdriers, the reach-pieces engaging the housings J being of precisely the same form and dimensions as the reach-pieces engaging the lower housings, the upper ones being, however, turned upside down, none of these reach-pieces being needed in case superposed driers are not present; O, crown-frames, reaching from one housing to the next and having their feet bolted to the arms of the housings, these crown-frames serving as unions and stiffeners for the general framing, and also for the support of the usual felt rolls, and paper rolls disposed over the driers, these crown-frames being formed with a central body narrow enough to go between the journals of the felt rolls which they carry, and having feet extending to the top arms of the housings and having outreaching arms extending to the boxes of the paper rolls which they carry, it being understood that these crown-frames are to be employed at each space between housings H in case superdriers are not present; P, the stretcher-frame for the felt of the superdriers, this frame having feet secured to the top arms of the housings below it in the same manner as the crown-frames engage the hous-

ings below them; Q, brackets secured to the top arms of the housings at the extremities of the series of housings, these brackets serving for the support of the initial and terminal felt rolls; R, arms pivoted to these brackets by a spring-joint and serving to support the journal-boxes for the spring roll; S, the usual felt rolls; T, the usual paper rolls; U, the spring-roll, of which there may, if desired, be one at each end of the drier system without changing construction; V, journal-boxes of uniform character for the support of the rolls, these boxes being provided in connection with the reach-pieces N, the crown-pieces, the stretcher-frame, the brackets Q, arms R, and elsewhere where the presence of a needed felt or paper roll may call for them, these journal-boxes being gapped so as to permit the free entry sidewise of the roll-journal into them, and having a bore sufficiently larger than the roll-journals to admit of a bushing; W, the pivot-bolts by which the arms R are united to their brackets, these bolts forming the pivots of hinges formed by the facial juncture of two disks; X, circumferential grooves in each of the journal-boxes V, leading from each side of the gap in the journal box a short distance from the gap around in the bores; Y, bushings adapted to fit within the bore of the journal-boxes and to fit the journal of the paper rolls and felt rolls; Z, a central projection from each bushing, adapted when the bushing is in place to seat in the groove X; *a*, a spring-cavity formed in the contiguous hinge-faces of the joint uniting the arms R to their brackets, and *b* a spiral spring encircling the bolt W and disposed within the cavity *a*, one end of this spring being secured to each of the hinge-disks of the joint.

The sole-bars extend beyond the drier portion as far as deemed necessary to receive the press part, the making part, the cutters, calenders, &c., thus permitting the contiguous general structures forming the paper-making machine to be adjusted along said bars into desired relationship with each other.

The housings H may be adjusted along said sole-bars into desired relationship with each other, and the number of the housings H may be added to or subtracted from, as desired, without change in the formation of the parts, and superdrier-housings J may be added as desired; or the superdriers may be abandoned and additional base-driers employed in the series to give the additional drying-surface. The housings J and H, being identical with each other in form and dimension, permit of the ready transposition of parts in a mill already in operation, so that base-driers entirely may be depended upon, the number of driers lessened or increased, as desired, or spread apart or closed up more, as desired, or superdriers added as required, or extra superdriers added above the superdriers shown. The form of the housings is such as to clearly expose the felt and paper where they pass, in the usual manner, upward between the driers and the felt and paper rolls, and the form of the crown-frames O is such as to expose the edges of the felt and paper where the felt and paper turn from roll to roll, thus permitting the ready passing forward of the paper web in case of breaks.

The journal-boxes V, wherever found about the machine, are to be of uniform size as to bore and dimension and disposition of grooves X, the gaps in these journal-boxes being, of course, in such radial direction as will be most consistent with the ready removal of the respective rolls. The journals of the felt and paper rolls are to be uniform in size. The bushings Y are to be throughout the machine uniform in size, so as to be interchangeable in any of the journal-boxes. They are preferably made of anti-friction metal of comparatively low fusibility, so as to be susceptible of casting in a metal mold in the manner in which bullets are made. A roll having been placed in its journal-boxes, a bushing, Y, is pushed over the journal and into the journal-box, while the projection Z passes longitudinally into the gap in the journal-box. When the projection Z comes opposite the groove X, the bushing is turned until the projection seats in the groove, thus securing the bushing properly in the journal-boxes. To remove the roll, the bushing is turned until the projection will pass through the gap, whereupon the bushing is pulled endwise out of the journal-box, thus permitting the roll-journal to pass through the gap. Extra bushings of this kind kept on hand permit the ready and economical maintenance of the roll-bearings without necessity for the removal of any parts but the worn bushings. The bushings serve in preventing the displacement of the roll-journals through the gap on the journal-boxes, regardless of whether the gaps be above or below the journals, thus rendering possible the employment of a uniform character of journal-boxes throughout the machine.

The journal-boxes K for the drying-cylinders are similar in character to the journal-boxes V, but of course are properly larger, and they are supplied with interchangeable bushes secured in the same manner. The journal-boxes K are integrally formed in the central body of the housings, and above these boxes the housings have openings sufficiently large to permit the ready lifting of the drier-journal from the box and its removal from the housing.

If the pivot-bolts W, uniting the arms R to their brackets Q, be tightened, the structure will become rigid in any adjusted position. By loosening the bolt W, the arm R will be capable of free oscillation at the hinge-joint, and the spring *b* will resist that oscillation in a given direction with a certain elastic force, whereby the parts serve for the proper support of the usual spring-roll. The tension of the spring may be readily increased by giving an additional wind or turn around its bolt.

I claim as my invention—

1. In paper-machine frames, the combination, substantially as set forth, of a longitudinal series of lower frame portions provided with feet, a wall for the general support of such frame portions, and a sole-bar resting upon said wall and engaged by said feet, and provided with means, substantially as described, for attaching said feet in adjusted position along said sole-bar.

2. In paper-machine framing, the combination, substantially as set forth, of frame parts provided with feet, a wall adapted for the general support of said frame parts, a sole-bar resting upon said wall and engaging with said feet, chairs C, engaging said sole-bar, and bolts D upon each side of said wall and engaging the wall and chairs.

3. In paper-machine framing, the combination, substantially as set forth, of frame portions provided with feet, a wall for the general support of said frame portions, a sole-bar resting upon said wall and engaged by said feet, chairs C, engaging said sole-bars, bars E, extending through said wall below the chairs, and eyebolts D, engaging said bars and chairs.

4. In paper-machine framing, the combination, substantially as set forth, of a longitudinal series of housings, H, formed each with a central body provided with a journal-box, K, and having each symmetrical spreading feet L and symmetrical spreading top arms, M.

5. In paper-machine framing, the combination, substantially as set forth, with a succession of housings adapted for the support of drying-cylinders, of crown-frames O, provided with spreading feet adapted to engage the tops of continued housings and with spreading top arms carrying paper-roll boxes and with a central narrow body carrying felt-roll boxes.

6. In paper-machine framing, the combination, substantially as set forth, of a successive series of housings, H, each having a central body provided with a box for a drier-journal, and provided with spreading feet L and spreading top arms, M, and crown-frames O, provided with spreading feet engaging the top arms of continuous housings, and having each a narrow central body carrying felt-roll boxes and spreading top arms carrying paper-roll boxes.

7. In paper-machine framing, the combination, substantially as set forth, of general frame parts for the support of drying-cylinders and paper and felt rolls, journal-boxes V, connected therewith and provided with cylindrical bores having radial gaps to permit the radial movement of the roll-journals and with circumferential grooves X and bushings Y, adapted to fit the roll-journals and fitting the bore of said journal-boxes, and having each a projection, Z, adapted for passage through the gap of its journal-box into engagement with the circumferential groove of its journal-box.

8. In paper-machine framing, the combination, substantially as and for the purpose set forth, with frame parts for generally supporting the journal-boxes of drying cylinders and rolls, of bracket Q, forming part of such general frame-work, arm R, carrying a journal-box and secured to said bracket by a hinge-joint provided with a spring-cavity, *a*, a bolt uniting said arm to said bracket and forming the hinge-pivot, a spring, *b*, disposed with said hinge-cavity around said bolt and engaging said arm and bracket.

GUSTAV KAFFENBERGER.

Witnesses:
W. A. SEWARD,
CARL SPENGEL.