(No Model.) 2 Sheets—Sheet 1.

G. H. STEINBACH.

APPARATUS FOR COUPLING VESSELS.

No. 404,993. Patented June 11, 1889.

Fig. 1.

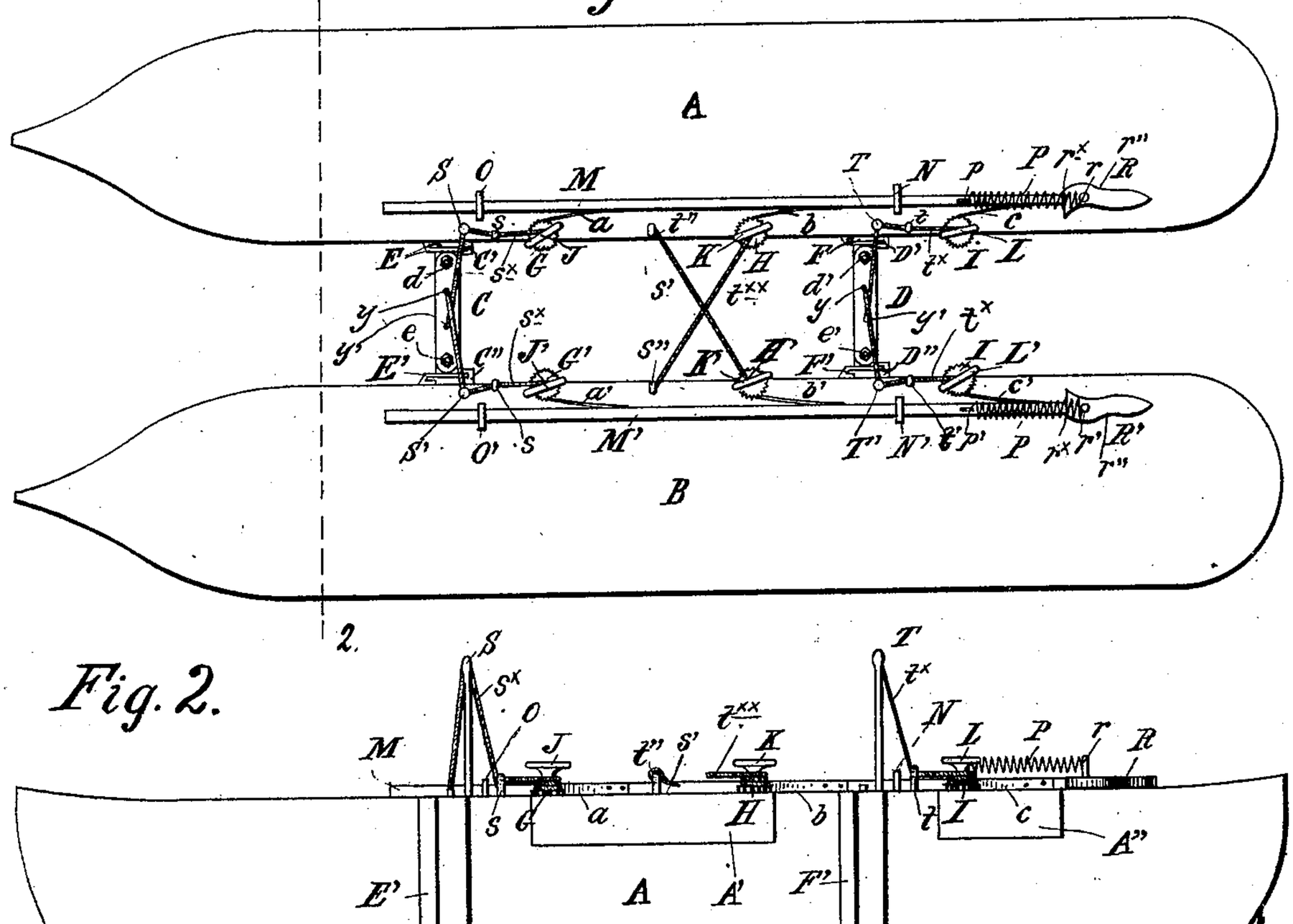
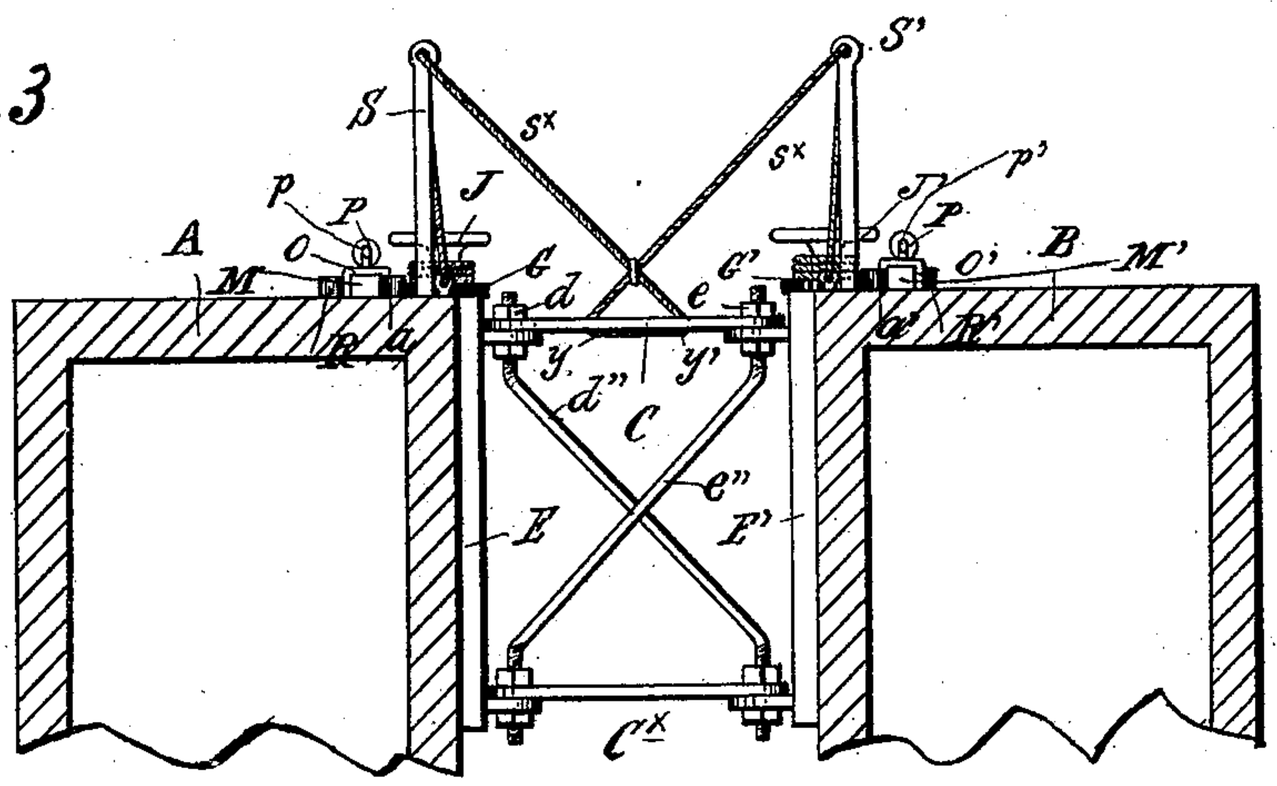


Fig. 2.

Fig. 3



Witnesses.
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(No Model.) 2 Sheets—Sheet 2.

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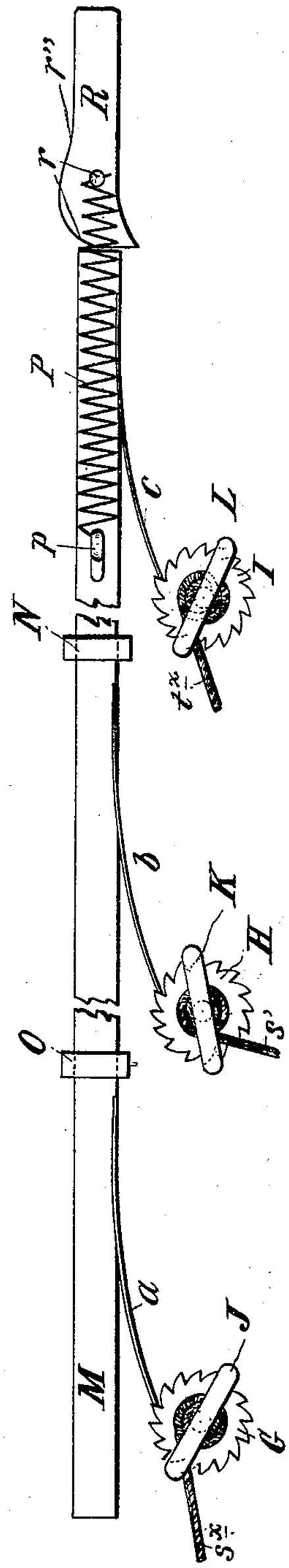

Fig. 4.

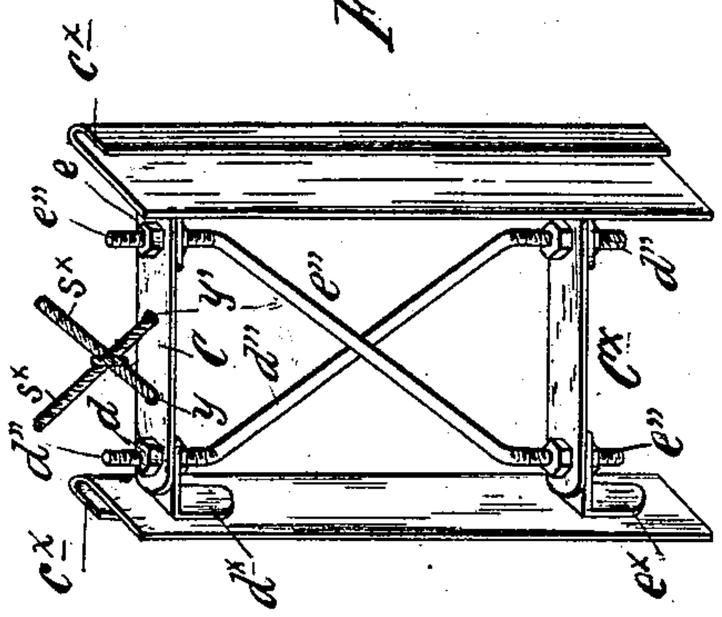

Fig. 6.

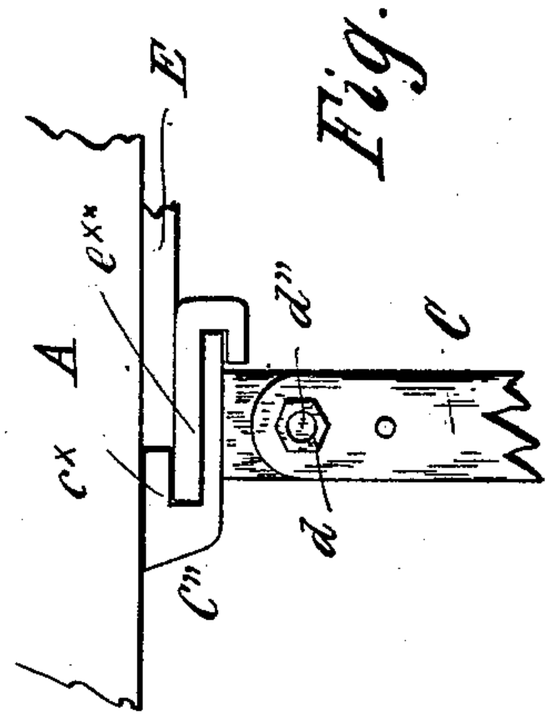

Fig. 5.

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UNITED STATES PATENT OFFICE.

GUSTAV HERMANN STEINBACH, OF LICHTENSTEIN, SAXONY, GERMANY.

APPARATUS FOR COUPLING VESSELS.

SPECIFICATION forming part of Letters Patent No. 404,993, dated June 11, 1889.

Application filed January 7, 1888. Serial No. 260,080½. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV HERMANN STEINBACH, a subject of the Emperor of Germany, residing at Lichtenstein, in the Kingdom of Saxony and Empire of Germany, have invented a new and useful Improvement in Joining Vessels Together to Obviate the Dangers of the Sea, of which the following is a specification.

The object of the invention is to provide means by which ships, when at sea, may be so joined together as to insure them mutual safety and obviate many of the dangers of navigation.

The invention relates to that class of appliances which are used for fastening ships together so that, although they approach each other, they will not come near enough to damage each other by striking together.

The nature of the invention consists in the details of combination and construction, substantially as illustrated in the accompanying drawings, hereinafter described, and subsequently pointed out in the claims.

Figure 1 is a top plan view of two ships connected together by my invention. Fig. 2 is a side view of a ship with a part of my invention attached. Fig. 3 is a cross-sectional view of two ships, taken on the line 1 2 of Fig. 1, with a part of my invention attached. Fig. 4 is a detail view illustrating the pawl-slide and some of its accompanying mechanism. Fig. 5 is a sectional view illustrating a part of the attaching mechanism, more fully hereinafter described. Fig. 6 is a perspective view illustrating a part of the mechanism, more fully hereinafter described.

A and B designate, respectively, the hulls of two ships. These may be either of the same or of different dimensions. Upon the deck of each ship are three ratchet-wheels G H I and G′ H′ I, carried by the revoluble winding-posts J K L and J′ K′ L′.

M and M′ designate sliding bars—one on the deck of each vessel—and held in place by the guides N O N′ O′.

R and R′ designate levers having eccentric ends *r* and pivoted to the deck at *r′*. Helical springs (designated by P P) connect the sliding bar M and the lever R and the sliding bar M′ and the lever R′. One end of each of these springs is fastened to the head of one of the pivots on which the levers R R′ turn at *r* and *r′*, and the other end of each to one of the links *p p′* upon said sliding bars, so that when the said levers stand in line with said bars, as illustrated, the bars will be pushed forward and the springs extended; but when the said levers are turned inwardly toward the middle of the ship the said spring will draw the said bars backward, so that their ends will rest in the curves *r″* of the said levers, and thus by turning the said levers the said bars may be slipped backward and forward at pleasure. Upon the side of each of these bars are attached three spring-pawls *a b c* and *a′ b′ c′*. These are so arranged that when the said bars are pushed forward they will engage the ratchet-wheels G H I and G′ H′ I, and when the said bars are drawn backward will release the said wheels from such engagement.

A′ and A″ designate metallic plates set in the sides of the ships to give the said revoluble winding-posts secure bearing near the edges of the ships.

On the side of each vessel are fixed two metallic plates, designated, respectively, by E E′ and F F′. Each of these plates is formed of two pieces fastened together side to side. One edge of the outer piece extends beyond the corresponding edge of the inner piece. The other edge of the outer piece is bent outwardly, so as to form a groove through the whole length of this piece nearly opposite the middle of the inner piece. When this plate is fastened on the side of the ship, two grooves are thus formed, into which fit the edges of the part C′, as illustrated in section in Fig. 5.

Fig. 6 illustrates a frame consisting of end pieces C″ C× and cross-bars *d″ e″*. To these end pieces are hinged the side pieces C C‴, being connected by the brackets *e*× and *d*×, as illustrated. These side pieces are bent upon themselves, so that they form folds *c*×, which fit into the grooves in the said metallic plates E E′ and F F′. The cables *s′* and *t*×× extend from the hooks *s″ t″* to the winding-posts H and H′. One end of the cable *t*× winds on the winding-post L′, passes thence through the eye *t′*, through an eye in the post T′, thence through the hole *y* of the end piece

D, thence through the hole y' of the same, thence through an eye in the post T, thence through the eye t, and thence to and around the winding-post L. The cord $s^{\times}$ is similarly arranged between the winding-posts J and J', passing through eye s, eye in post S', holes y and y' in end piece C, eye in post S, and eye s, and wound on said winding-posts J and J'.

To use this device the ships are brought close together, as illustrated by Figs. 1 and 3. The various parts are then put in proper place, as illustrated in the drawings. Then the cables are wound taut on the winding-posts, the pawls on the bars M M' engaging the ratchet-wheels on said posts and holding the cables taut. It will then be found while there is enough play in the mechanism to allow for the necessary motion of the vessels that a disabled vessel may ride securely and safely by the side of a sound vessel. When one of the levers R or R' is turned, the corresponding bar will slide back, disengage the said pawls from said ratchet-wheel, leaving the winding-posts free to turn. The said cables will then be free to unwind, the frames between the ships will fall out, and the ships will be free to part. Only one of the sliding bars is then drawn back, so that the cable from the other ship may still hold said frames and prevent them from being lost.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the hulls of ships, of sliding bars running in guides upon the decks thereof, eccentric-levers pivoted on said decks, helical springs attaching said bars and levers, spring-pawls upon said bars, winding-posts pivoted in said hulls, and ratchet-wheels upon said posts and engaged by said pawls, and cables wound around said posts and arranged to connect one hull with another, all substantially as and for the purpose set forth.

2. The combination, with the hulls of ships, of the upright metallic plates E E' and F F', constructed with folds $e^{\times\times}$, and the frames C C' C'', constructed with the folds $c^{\times}$, and adapted to fit to said upright metallic plates, winding-posts upon the decks of said hulls, and cables wound upon said posts attached to said frames to hold the same in place and extending from one winding-post to another to connect one hull with another, substantially as and for the purpose set forth.

3. The combination, with the hulls of vessels, sliding bars arranged upon the decks thereof, as specified, eccentric-levers working against said bars, springs connecting said bars and levers, pawls upon said bars, winding-posts journaled in said hulls, ratchet-wheels on said winding-posts engaged by said pawls, and upright metallic plates folded and attached to the sides of said hulls, as described, of metallic frames, substantially as specified, having side pieces adapted to said metallic plates and attaching said hulls together, and cables wound upon said winding-posts passing through the upper rail of said frame, arranged as set forth, holding said parts in place and further securing said hulls together, all substantially as and for the purpose set forth.

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

GUSTAV HERMANN STEINBACH.

Witnesses:

OTTO CREUTZBURG,

WILLIAM R. MATTHES.