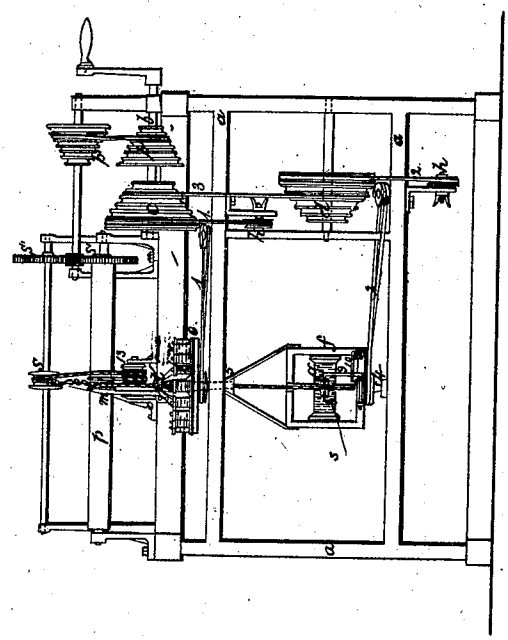
No. 30,944. PATENTED DEC. 18, 1860.

H. HEINEMANN & J. BUSER.

MACHINE FOR COVERING CORD.

Fig. 1.



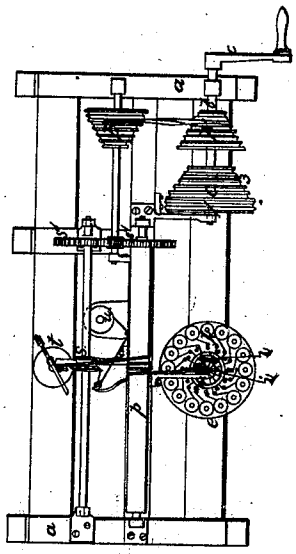


Fig. 2.

Fig. 3.

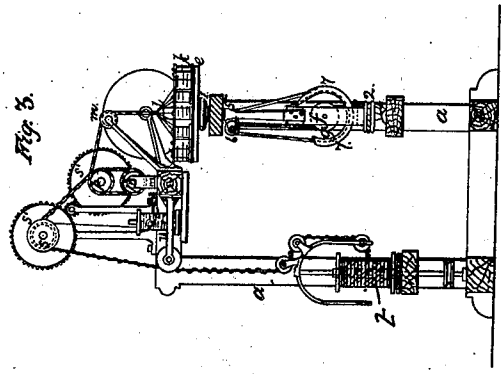


Fig. 4.

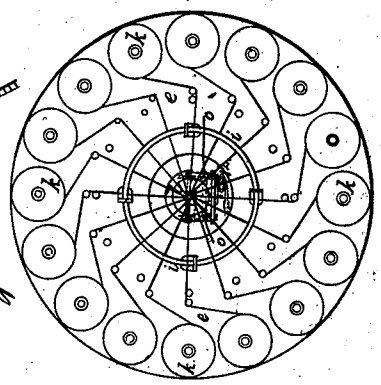
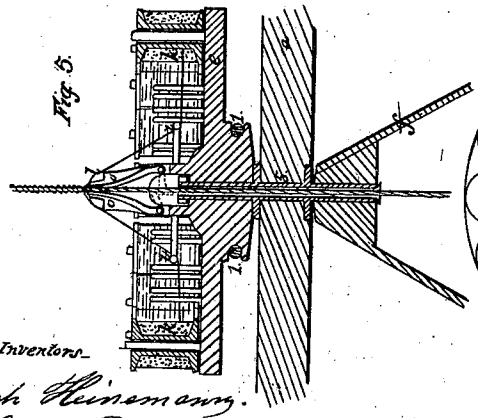


Fig. 5.



Inventors.

Hirsch Heinemann.

John Buser

Witnesses.

Samuel W. Farrell

Chas. H. Smith

UNITED STATES PATENT OFFICE.

HIRSCH HEINEMANN AND JOHN BUSER, OF NEW YORK, N. Y., ASSIGNORS TO HIRSCH HEINEMANN, OF NEW YORK, N. Y.

MACHINE FOR COVERING CORD.

Specification of Letters Patent No. 30,944, dated December 18, 1860.

To all whom it may concern:

Be it known that we, HIRSCH HEINEMANN and JOHN BUSER, of the city and State of New York, have invented, made, and applied to use a certain new and useful Machine for Covering Cords; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, making part of this specification, wherein—

Figure 1 is a side elevation of our machine, Fig. 2 is a plan of the same, and Fig. 3 is an end view with the frame removed.

Similar marks of reference denote the same parts.

Our said invention relates to covering cord with silk, and we will first briefly set forth how the silk covering has heretofore been applied. Threads of cotton or other material have been stretched along a loft, and twisted. If a few threads were used the twist was greater; if many, the number of turns was less. After twisting these strands more or less, a covering of silk is applied, by stretching alongside of these strands threads of "tram" silk in sufficient number so that when the strand is twisted these threads will be twisted around the outside of said strands, the object being to make a strand adapted to laying up cable or "pearl" cord, this being done by "cutting in" a thread of silk or other material, *i. e.*, partially unwinding the strand around said thread, thus giving a screw form appearance, and when three or more of these strands are twisted together a "cable cord" is produced which looks as if the strands were braided instead of twisted and the direction of the twisting lays the threads of covering silk lengthwise of the cord, or in other words they are again unwound sufficiently to compensate for the angle at which the respective strands are laid up in the cord. This operation of forming cable cord is clearly distinguished from the "gimp" cord, wherein a helical covering of silk is wound all around the cotton strands or threads, and cannot be used for forming cable cord because the threads composing said silk covering can never be made to run in a direction lengthwise of the cord when the strands are laid up.

Our machine dispenses with the great length of room now necessary for covering the strands as aforesaid, and also enables us to use much less silk covering and make a much better article because the silk threads are laid on more evenly, and not only so but we are enabled first to twist the threads forming the strands to any desired extent according to the number of threads composing said strands, and then give to the revolving silk carrier any number of independent revolutions around the twisted strand to make the threads of silk inclose the whole cord and not lap over each other or gather in a mass at one place while another portion is left without covering.

We have found practically that our machine occupying a space of not over ten by twelve feet and attended by a girl, will do more and better work than could be performed by the best means heretofore in use for this purpose in a space of twenty-five by seventy-five feet and the wages for workmen would amount to probably six times as much as that of the attendant on our machine. Besides this with our machine we are able to make a better article with about one-half the quantity of silk, because all the silk is laid with the greatest accuracy evenly all around upon the surface of the strands.

Having thus stated the general objects of our machine we proceed to set forth our mechanism and its operation.

In the drawing *a*, is the frame of the machine.

b, is a shaft driven by competent power.

c, is a cone of pulleys with a band 3, to the cone of pulleys *d*.

1, is a band fitted to revolve the silk carrier *e*, and 2, is a band to revolve the creel *f* and bobbin *g* on which the strands are wound; and by altering the position of the band 3, on the cone pulleys *c*, *d*, the speed of *e*, and *f* can be regulated relatively to each other so that the strand can be twisted more if the number of threads composing it be less or vice versa. The creel *f* revolves on the center 4, at the bottom and the pipe 5 at the top, which pipe is fixed in the frame *a*, and allows the passage of the strand through it.

By reference to Fig. 3, it will be seen that the threads composing the strand pass up from the bobbin *g* over a roller 6, thence

down and through the crease of a semicircular half pipe 7, that is affixed to the creel frame and from that up through the pipe 5, the object of this half pipe being to insure an even and uniform twist of the threads as the creel revolves around the strand and said strand is drawn off through the pipe 5, as hereafter detailed.

The clamp 8, set on an arm 9, acts to cause the necessary friction for keeping the strand tight, 10 being a spring arm that is placed in one of the notches in 9, to give the necessary pressure, and this pressure is regulated by the position of said spring arm nearer to or farther from the axis of the arm 9. The bands 1 and 2 may be provided with tightening pulleys or not as desired.

The revolving silk carrier *e*, is formed of a circular plate and turns upon the aforesaid pipe 5. In Fig. 4, we have shown a plan of said silk carrier, and in Fig. 5, a vertical section of the same; both of which figures are in larger size than Figs. 1, 2 and 3.

k, *k*, are spools or bobbins containing the threads of silk. These are set on pins in *e*, and we prefer and use sixteen of these pins because we can place upon each pin a spool containing one two or more threads, or we can place four or eight spools equidistant around the carrier *e*, on said pins. The threads of silk, one or more from each spool, pass from said spools under a ring of wire *i*, and to make the threads lead uniformly we introduce a range of sixteen pins, near this ring, so as to divide the threads equally around the circular ring *i*, and a second range containing twelve pins may be introduced, if required, as shown in the drawing, so as to apportion twelve, six, four or three threads uniformly around the ring *i*. These silk threads pass up over a semicircular cap *l*, through the center of which the strand passes vertically from the pipe 5, over a roller *m*, to the apparatus for drawing the strand along and hence as said strand is drawn up through this cap in a twisted form, and the silk carrier *e*, is revolved, the threads of silk are wound around this strand or laid onto the same just sufficiently to thoroughly cover it in a uniform and even manner.

In order to allow for larger or smaller strands passing through the machine and for retaining the same perfectly in the center of the cap *l*, that the covering on the strands may be uniform, we make use of a double jaw or forceps *o*, *o*, see Fig. 5. The separate sides of these double jaws are formed as bent levers, the short ends of which are connected to each other by a vertical link that is drawn down by a spring 12, Fig. 4. Hence said jaws are allowed to separate for larger cord and hold that cord in a central position.

From the roller *m*, the covered strand passes around the barrel *p*, and roller 13, the required number of times to give the necessary friction for drawing the strand through, and thence passes over and around the barrel *s*, to a fly frame and bobbin *t*, upon which it is wound. The barrels *p*, and *s*, are driven at the necessary speed, to draw off the strand regularly, by suitable pulleys or gears; we have shown the cones of pulleys *p'*, *p'*, and gears *s'*, *s'*, which may be used for this purpose. The fly frame may be of any usual construction so as to wind up the strand upon any usual bobbin. Where the strand is to be laid up in the ordinary way for cord the necessary additional twist may be given as it goes onto the spool so that three or more strands may be laid together, but where the cable cord is to be formed we introduce the spool *u*, from which a sufficiently strong thread passes over the pulley or barrel *s*, and the fly *t* being revolved in the reverse direction to the twist of the strand cuts this thread into the strand, causing it to assume a spiral or screw form, so that when laid into a cord with three or more strands is produced the braided appearance hereinbefore set forth.

The apparatus for laying up several strands into a cord may be of any known character and does not require to be specified herein. We have shown in the drawing a machine with one creel and covering apparatus, but three or more may be set in the same frame and driven by bands to suitable pulleys and make all the same kinds, or different kinds of strands as required.

The material composing the covering, it will be evident, may be silk, mohair, wool, or any finer or more costly material than the inner or body part of the strand.

It will be seen that by communicating separate revolving motions to the creel *f* and silk carrier *e*, we are enabled to make any size of cord and use any desired number of covering threads, because we give the desired amount of twist to the strand as one operation, and then cover the same by the threads wound around said strand by an independent revolving motion regulated by the amount of material used for the covering in order that said covering may be even and perfect. In all machines where the covering material has revolved with the creel carrying the strand only a very small cord could be made and that with a considerable loss of silk, because of not being applied evenly after the strand was twisted, for usually the threads forming the strands and the silk covering have been twisted simultaneously and hence the silk becomes more or less mixed in with

the threads. In our invention however the strand being first twisted by an independent motion the silk covering is then laid on the hard, even, smooth, round, strand and much more perfectly than with any other apparatus we are acquainted with.

Having thus described our said invention what we claim and desire to secure by Letters Patent is—

1. The arrangement of a revolving creel *f* to twist the strand with a revolving carrier plate *e*, for laying the silk or other fibers upon the outside of said strand when each has a separate revolving motion so as to make different sizes and characters of strands as set forth.

2. The construction of the cap *l*, and jaws *o*, *o*, in combination to guide the strand so that the covering material may be laid evenly thereon, as set forth.

3. The revolving bobbin *t* and fly frame acting as specified in combination with the covering apparatus to twist in a cord, or "cut" the strand as it passes from the covering apparatus as set forth.

In witness whereof we have hereunto set our signatures this fifth day of May, 1860.

HIRSCH HEINEMANN.
JOHN BUSER.

Witnesses:
LEMUEL W. SERRELL,
CHAS. H. SMITH.