

(No Model.)

3 Sheets—Sheet 1.

W. MUNDT.
BRAIDING MACHINE.

No. 468,997.

Patented Feb. 16, 1892.

Fig. 1.

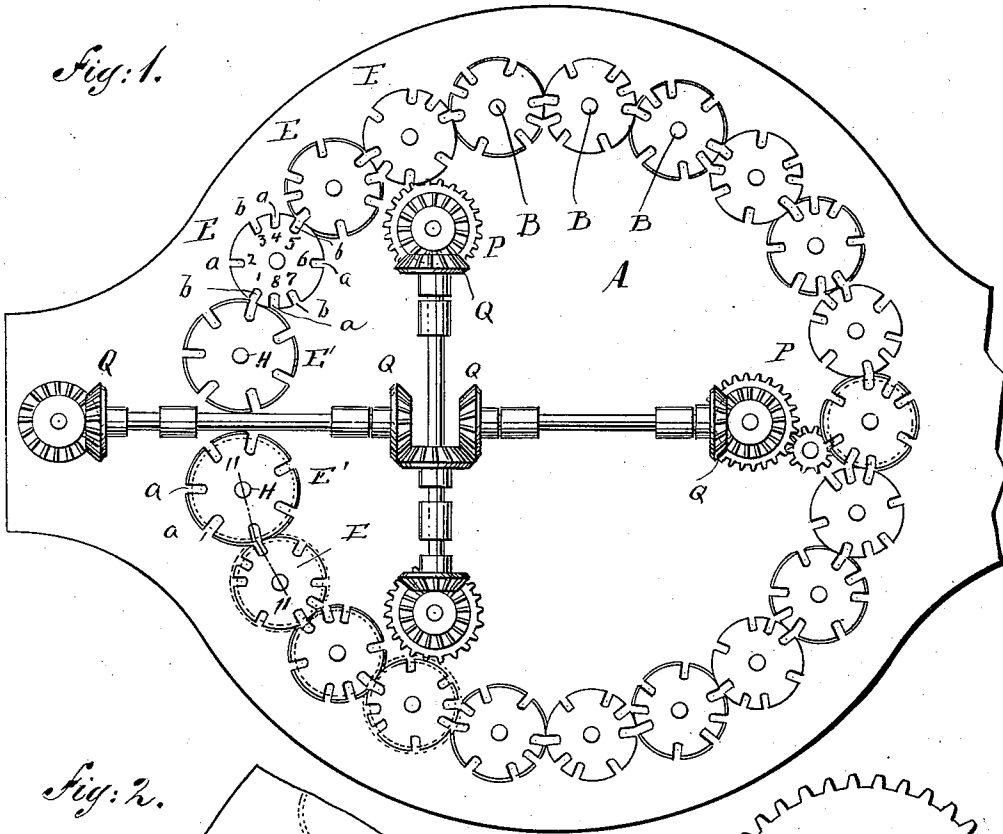
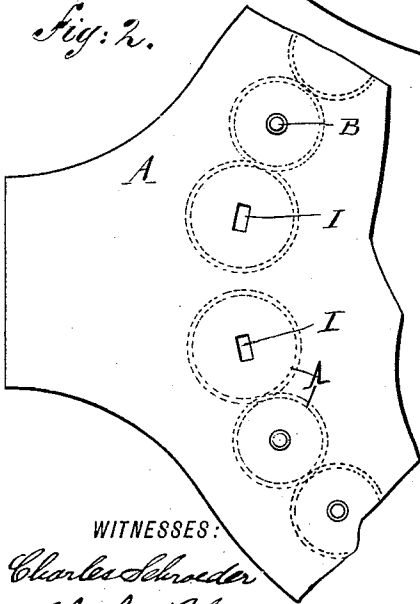


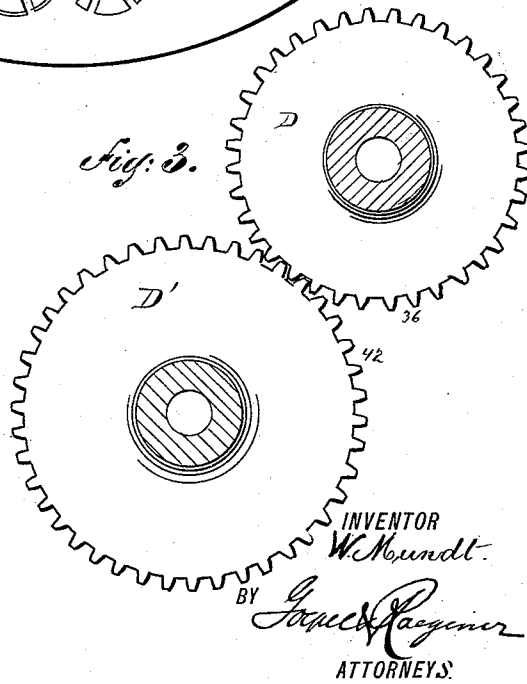
Fig. 2.



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Fig. 3.



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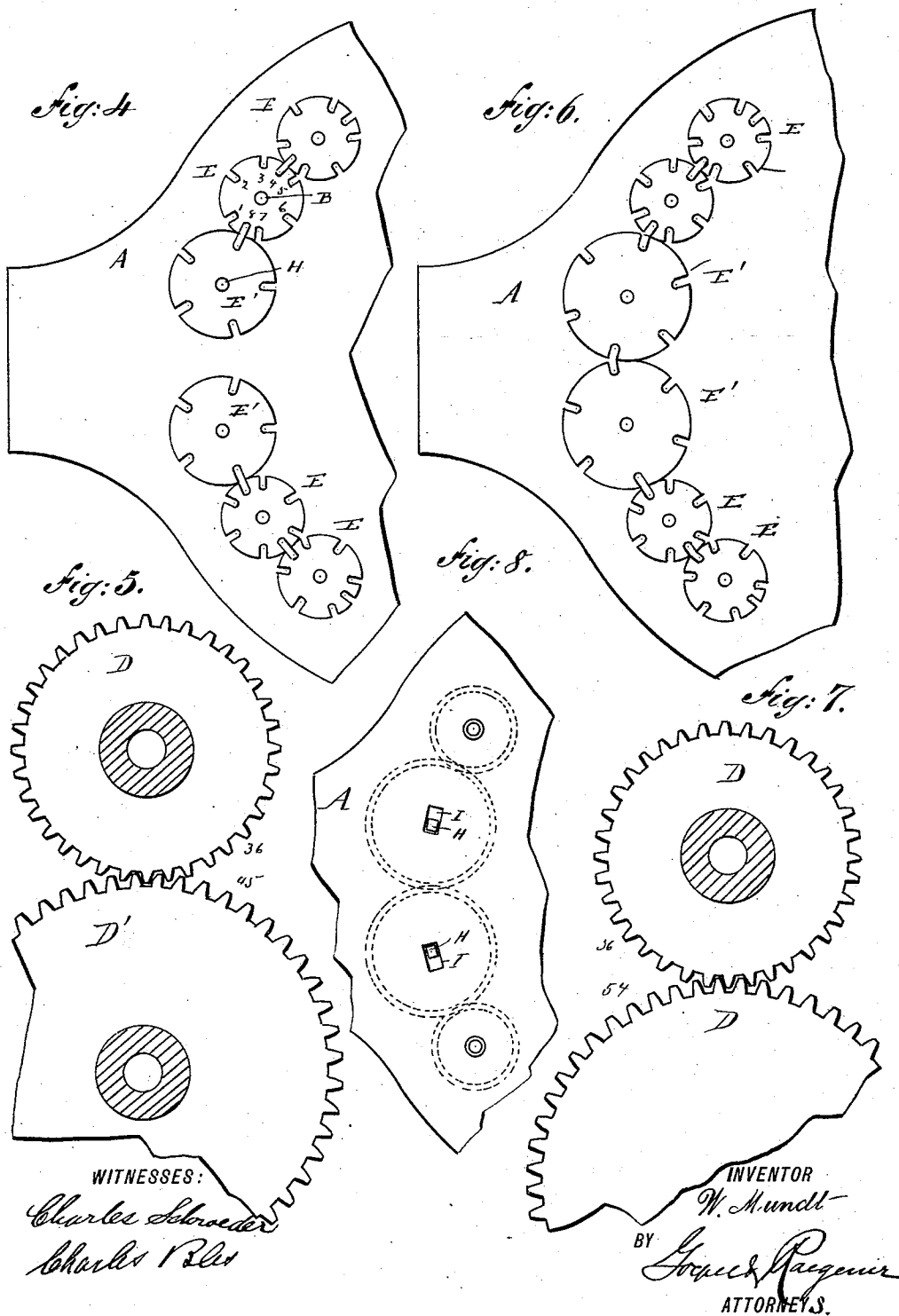
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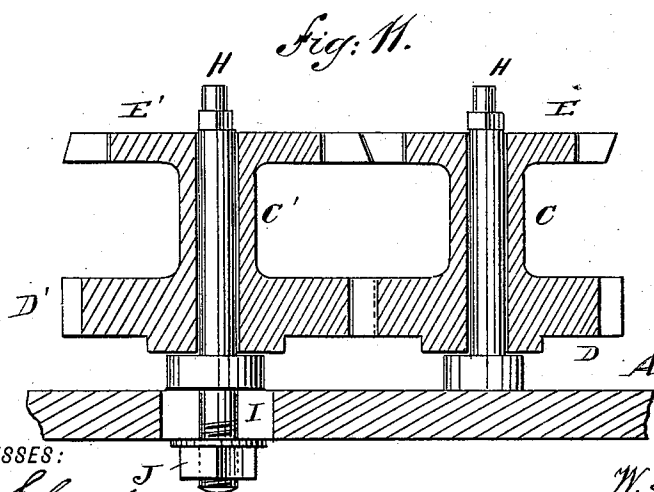
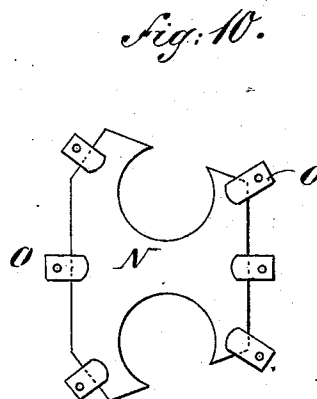
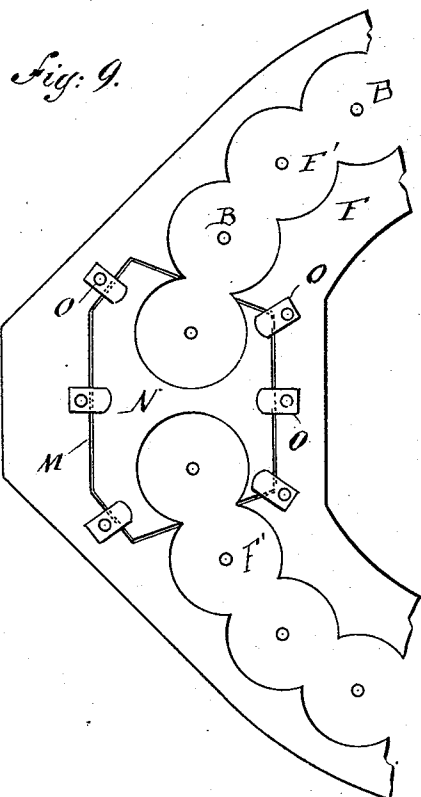
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WITNESSES:

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UNITED STATES PATENT OFFICE.

WILHELM MUNDT, OF NEW YORK, N. Y.

BRAIDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 468,997, dated February 16, 1892.

Application filed October 7, 1891. Serial No. 408,007. (No model.)

To all whom it may concern:

Be it known that I, WILHELM MUNDT, a citizen of the United States, and a resident of New York city, in the county of New York, in the State of New York, have invented certain new and useful Improvements in Braiding-Machines, of which the following is a specification.

This invention relates to improvements in that class of machines that are used for making braids, and are constructed with a series of notched wheels mounted on the same shafts with engaging cog-wheels or any other driving-gear, said notched wheels serving to carry spool-holders in serpentine curves around fixed spool-holders for the purpose of producing the proper unlocking and binding of the threads forming the braid. Said notched wheels are usually made for a certain kind of braid, and only this certain kind of braid can be made on the machine.

The object of my invention is to provide a braiding-machine on which different kinds of braids can be made without requiring all the wheels of the entire train to be changed, all that is necessary being to make a change in the end wheels of the train.

My invention consists in a usual braiding-machine having notched wheels provided with additional notches, the end notched wheels being readily removable, so that they can be replaced by wheels with different notches, according to the kind of braid to be made.

The invention also consists in the construction and combination of parts and details, which will be fully described hereinafter, and finally pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of the gearing of my improved braiding-machine, the top plate in which the guide-slots are formed being removed. Fig. 2 is a plan view of part of the base-plate, showing the slots for adjusting the end wheels. Fig. 3 is a plan view of part of the gearing for making a certain kind of braid. Fig. 4 is a plan view of part of the bottom plate of the machine, showing different end wheels from the construction shown in Fig. 1 for the purpose of making different kinds of braid. Fig.

5 is a plan view of part of the gearing corresponding to Fig. 4. Fig. 6 is also a plan view of part of the bottom plate of the machine, showing another arrangement of wheels for making still another kind of braid. Fig. 7 is a plan view of part of the gearing for the arrangement shown in Fig. 6. Fig. 8 is a plan view showing the adjustment of the end wheels of the train of gearing. Fig. 9 is a plan view of the top plate, showing the detachable section for guiding the end wheels. Fig. 10 is a plan view of said detachable section. Fig. 11 is an enlarged detail sectional view on the line 11 11 of Fig. 1, showing the arrangement of the wheels.

Similar letters of reference indicate corresponding parts.

In the base-plate A the spindles B are fixed on a circular line in the manner as customary in braiding-machines, and on each spindle B a sleeve C is mounted. On the bottom of each sleeve C a cog-wheel D is formed, and on top a notched wheel E. All the notched wheels E, with the exception of the end wheels, are provided with eight notches, of which four are arranged quarter-circle from each other, and of these two diametrically-opposite notches *a* have an additional notch *b* at each side, so that four of the notches are separated a quadrant and six notches are separated from each other a distance corresponding to an arc of thirty degrees. I have shown nineteen notched wheels, where it is evident more or less may be used, as may be desired. The top plate F is provided with a series of adjacent openings F' in the usual way, below which openings the notched wheels E can rotate, and on the upper end of the fixed spindle B plates A³ (shown in dotted lines in Fig. 2) are held, which with the edges of the openings F' form the slots in the usual manner for guiding the movable spool-holder. The end wheels E' of the train-gearing are made integral with a sleeve C', at the bottom parts of which a cog-wheel D' is formed, said sleeves C' being mounted on the movable spindles H, which pass through the slots I in the base-plate and are locked in the desired position by means of the nuts J.

As shown in Figs. 1, 2, and 3, the machine is adjusted for making so-called "Hercules" braid, and in this case the end wheels E' have seven notches, forming seven wings between the notches, and the gearing must be so arranged that the lower ends of the spool-holders pass into notches *a* in the wheels E, that are separated from each other by segments corresponding to sixty degrees—that is to say, the notches into which the spool-holders pass must be one-sixth of the circumference of the wheel from each other. For example, in Fig. 1, for the first wheel E the spool-holder would pass into the notches marked 1, 2, 3, 5, 6, and 7 and the notches 4 and 8 would not be used, and every time that the wheel E' makes a seventh of a revolution the first wheel E must make one-sixth of a revolution, so that the notches *a* of the wheels E' and E will register to permit the lower end of the spool-holder to pass from the notch *a* in the wheel E' into a notch *a* or *b* of the first wheel E. As the other wheels E are all geared alike, it will follow that the notches 1, 2, 3, 5, 6, and 7 of each wheel E are used for this kind of braid.

In order to rotate the wheels E' and E at the proper speed, the proportion of the gear-wheels D and D' corresponding to the wheels E and E' must be as six is to seven. For example, if the cog-wheel D has thirty-six teeth—that is, six to each subdivision—then the cog-wheel D' must have forty-two. The cog-wheels D remain permanently in the machine, but the cog-wheels D' are replaced with the corresponding wheels E' for the certain kind of braid to be made. According to the diameter of the wheels E' D' the spindles H must be shifted in the slots a greater or less distance from the first wheel E. D.

In the construction shown in Figs. 4 and 5 so-called "binding-braid" is to be made. In this arrangement the wheels E' have five notches *a*, and only the four notches *a* of each wheel E are used, which notches are a quadrant from each other. The notches 2, 4, 6, and 8 only are thus used, and the notches 3, 5, 1 and 7 are idle; or, in other words, the wheels E' must take one-fifth of a revolution every time the wheels E make a quarter of a revolution, and for that purpose the proportion of the wheels E D to the wheels E' D' must be as 4 is to 5. As each wheel E D in the machine has thirty-six teeth, as previously mentioned, the wheels D' now used must have forty-five teeth, in contradistinction to the wheels D' used in the arrangement shown in Figs. 1 to 3, which had only forty-two teeth. The spindles H must thus again be moved a greater distance from the fixed spindles of the end wheels E D.

Figs. 6, 7, and 8 show the arrangement for making diamond braid. In this construction the second, fourth, sixth, and eighth notches *a* of each wheel E are used, and the wheel E' must have six notches and must make one-

sixth of a revolution. The proportion of the wheels D to D' and E to E' must be as four is to six, and as the wheels D have thirty-six teeth it follows that the wheels D' must each have fifty-four teeth. The wheels E' are now of such a diameter that they are in contact with the end wheels E and also with each other, and the direction of movement of the spool-holders is not reversed at the end of the train of gearing, as shown in Figs. 1 and 4, but the spool-holders continue on, traveling in the same direction around the machine. It is evident that for each change made in the size of the wheels E' E' and corresponding wheels D' D' the spindles H must be shifted, and likewise that part of the top plates F in which the wheels E' E' revolve must be adjusted accordingly. To permit of such an adjustment said top plate is provided with an opening M, in which the detachable plate N, provided with fastening-clips O, fits. Every time the wheels E' D' E' D' are changed the detachable plate N must be removed to be replaced by another corresponding plate.

P P P P are cog-wheels engaging some of the wheels D and are driven by beveled gearing Q from the driving-shaft in the usual well-known manner. By thus merely interchanging or replacing the end wheels of the train of gearing the machine can be used for making different kinds of braid without requiring any adjustment or change whatever of the remaining parts of the gearing and without requiring the detachment of any parts of the frame. This change can be made in a very short time, and thus this machine can be used for the same purposes for which formerly three distinct and separate machines were used.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A braiding-machine constructed with a row of engaging cog-wheels, a corresponding row of notched wheels united with the cog-wheels, said notched wheels each having four notches separated a one-quarter circle from each other, and at two of said notches located diametrically opposite each other an additional notch arranged at each side of each of said two diametrically-opposite notches, substantially as set forth.

2. A braiding-machine constructed with a series of fixed spindles, engaging cog-wheels mounted on the fixed spindles, a notched wheel united with each cog-wheel, and two adjustable spindles, each having a cog-wheel and a notched wheel and adjacent to each other and to the fixed spindles, substantially as set forth.

3. In a braiding-machine, the combination, with a plate provided with slots, of a series of fixed spindles, a cog-wheel, and a notched wheel mounted on each spindle, two adjacent spindles passing through slots in said

plate, in which slots said spindles can be moved toward and from each other, means for locking the spindles in place, a cog-wheel on each spindle, and a notched wheel connected with the cog-wheel, substantially as set forth.

4. The combination, with a base-plate provided with slots, of a series of fixed spindles, a cog-wheel and a notched wheel mounted on each fixed spindle, two adjacent spindles passed through slots in said plate, in which slots they can be moved toward and from each other, means for locking said spindles in place, a cog-wheel and notched wheel on each adjustable spindle, a top plate in which the notched wheel can rotate, and a removable section of said top plate fitting in an

opening in said top plate and also having openings in which the notched wheels on the adjustable spindles can rotate, substantially as set forth.

5. A braiding-machine having a train of engaging cog-wheels, a notched wheel connected with each cog-wheel, and adjustable spindles for the end wheels of the train of wheels, said wheels being interchangeable, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

WILHELM MUNDT.

Witnesses:

OSCAR F. GUNZ,
CHARLES SCHROEDER.